

Bally[®]

ACAPULCO

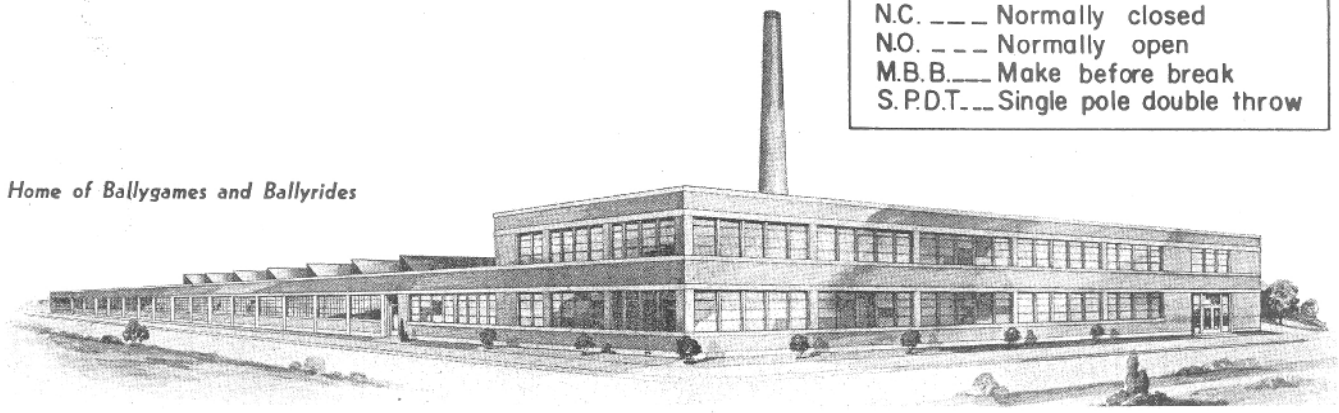
OPERATING INSTRUCTIONS AND PARTS CATALOG

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**

Code	
N.C. ___	Normally closed
N.O. ___	Normally open
M.B.B. ___	Make before break
S.P.D.T. ___	Single pole double throw

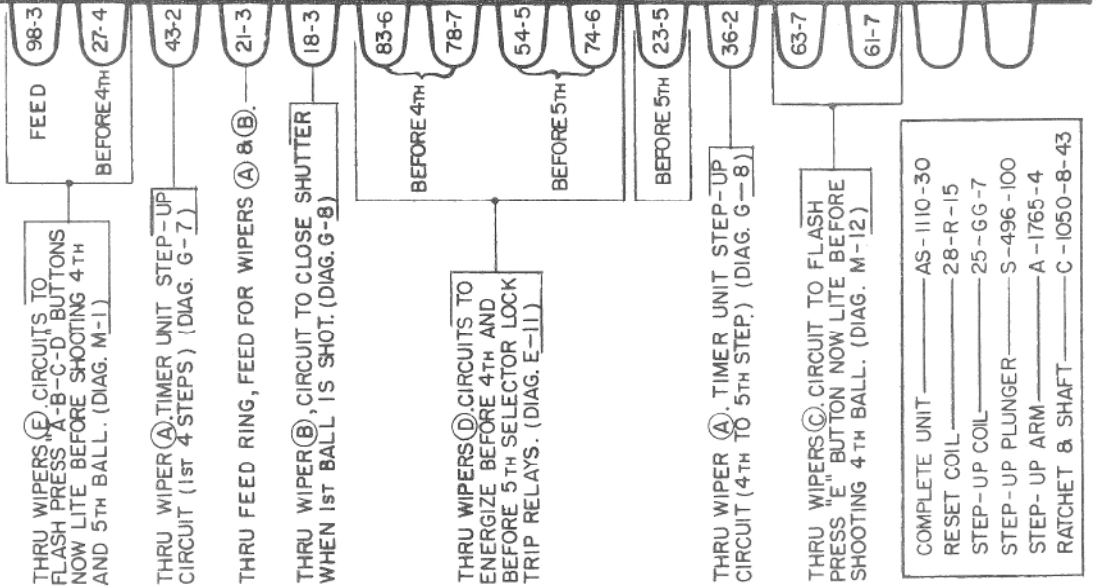
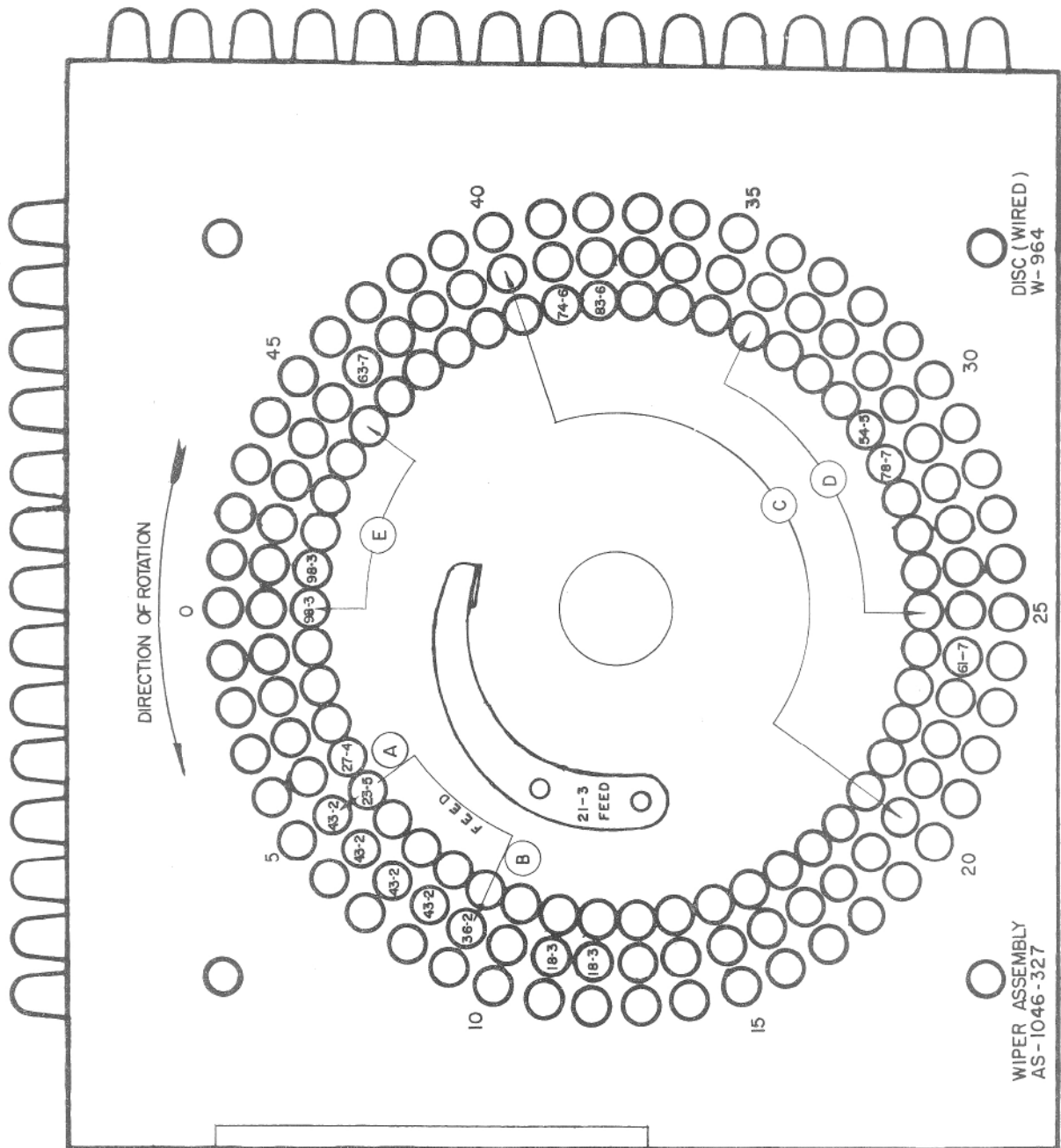
Home of Ballygames and Ballyrides

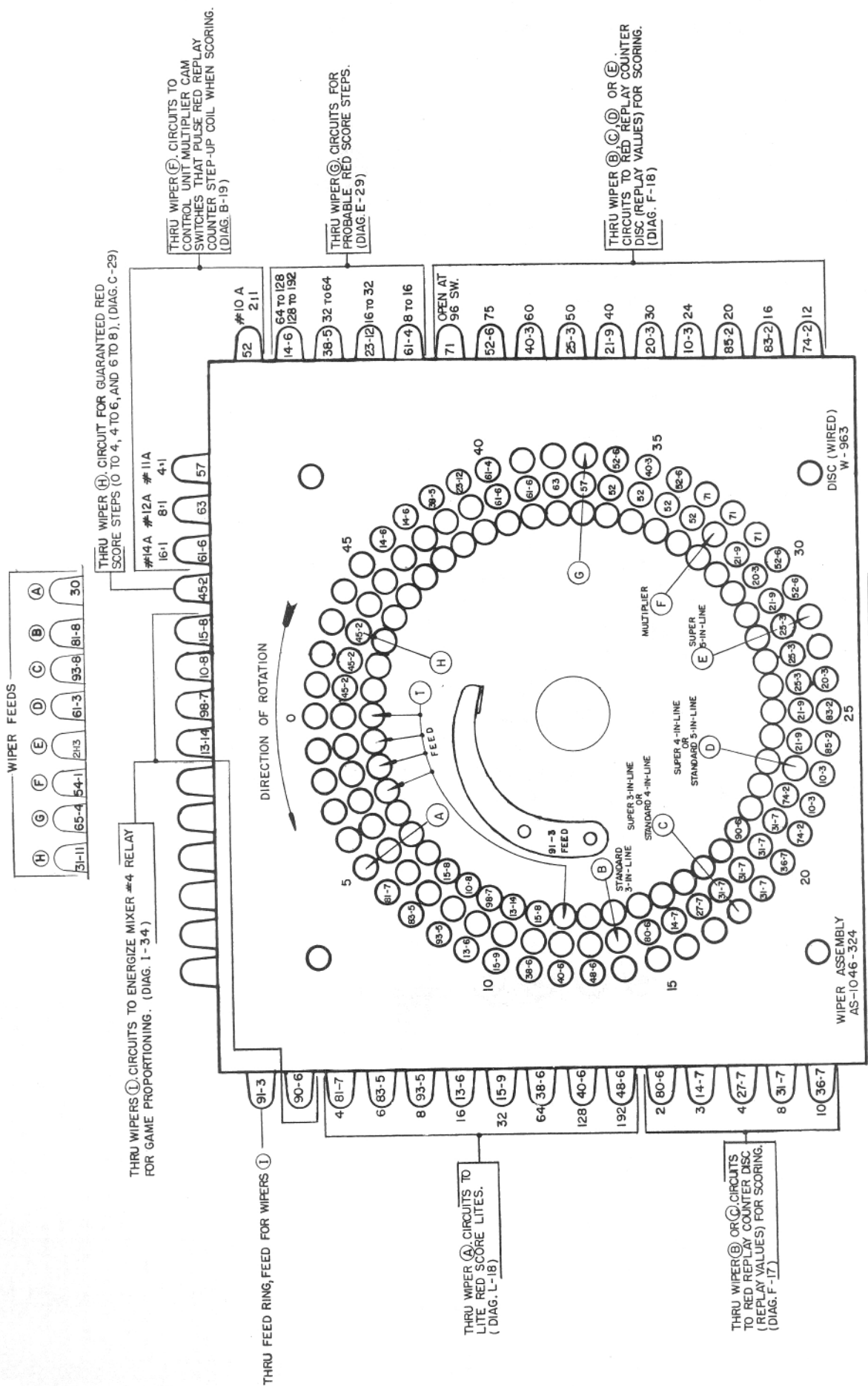




TIMER UNIT viewed from BUTTON or WIPER side

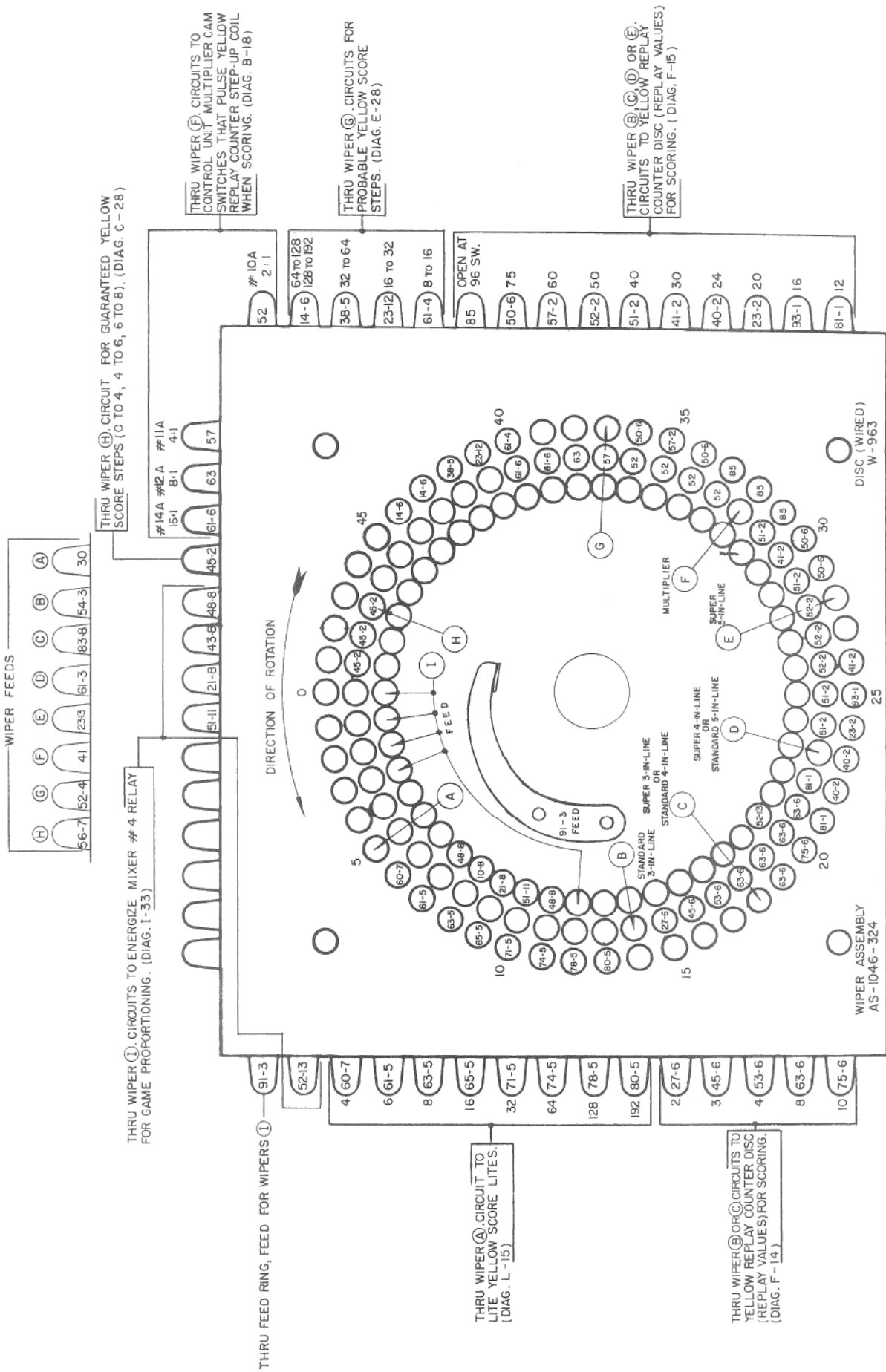
8 step unit. Wipers shown in zero or reset position



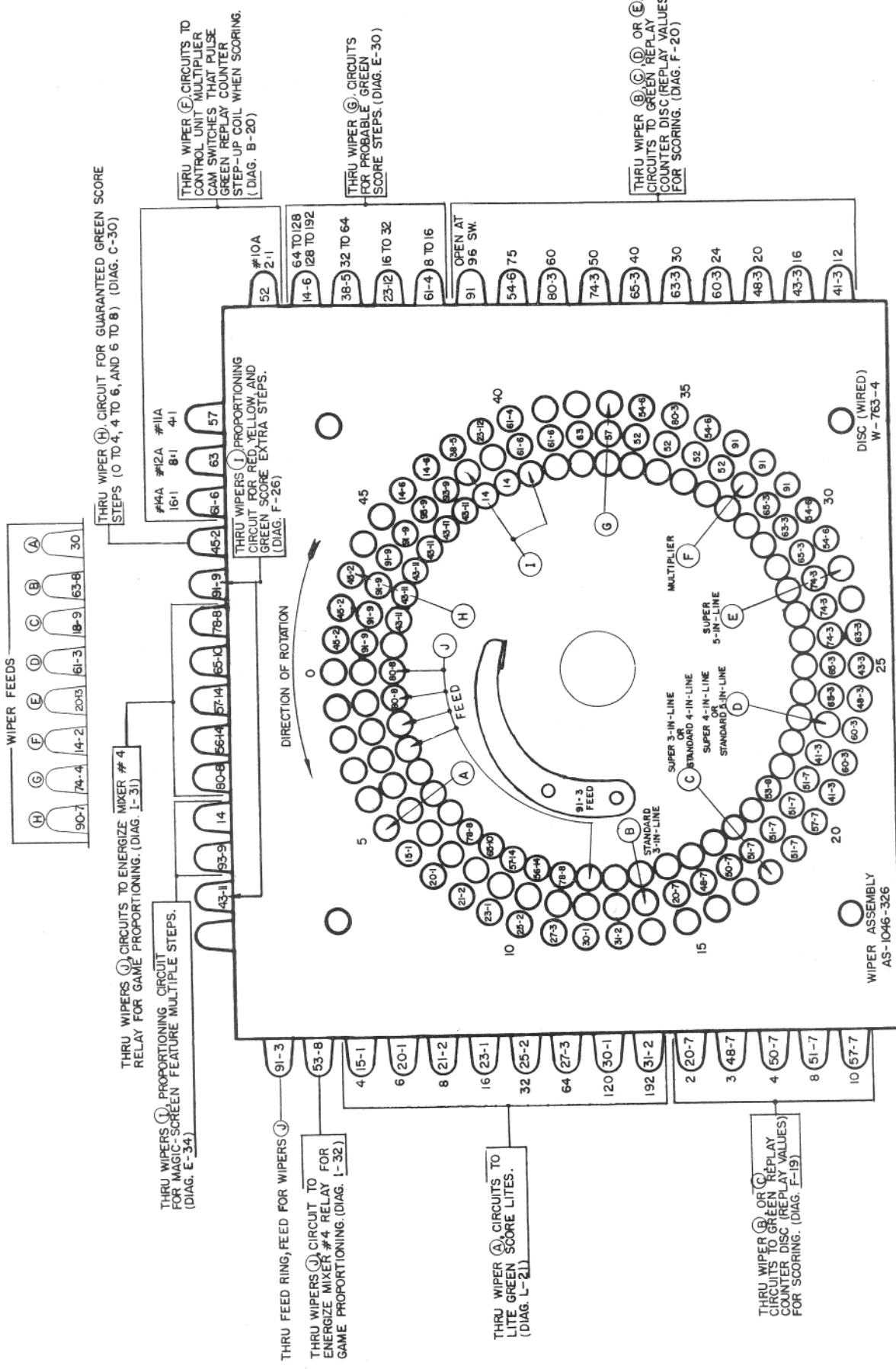


YELLOW SCORE UNIT viewed from BUTTON or WIPER side

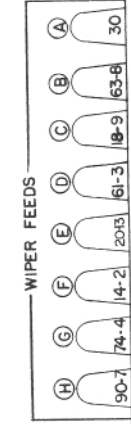
8 step unit. Wipers shown in zero or reset position



GREEN SCORE UNIT viewed from **BUTTON** or **WIPER** side



- COMPLETE UNIT — AS-1022-65
 RESET COIL — 28-R-15
 STEP-UP-COIL — 25-GG-7
 STEP-UP PLUNGER — S-496-100
 STEP-UP ARM — A-1765-8
 RATCHET & SHAFT — C-1050-B-39



THRU WIPER (H) CIRCUIT FOR GUARANTEED GREEN SCORE STEPS (0 TO 4, 4 TO 6, AND 6 TO 8) (DIAG. C-30)

THRU WIPERS (I) PROPORTIONING CIRCUIT FOR RED, YELLOW, AND GREEN SCORE EXTRA STEPS. (DIAG. F-26)

THRU WIPER (F) CIRCUITS TO CONTROL UNIT MULTIPLIER CAM SWITCHES THAT PULSE GREEN REPLAY COUNTER STEP-UP COIL WHEN SCORING. (DIAG. B-20)

THRU WIPER (G) CIRCUITS FOR PROBABLE GREEN SCORE STEPS. (DIAG. E-30)

THRU WIPER (B) (C) (D) OR (E) CIRCUITS TO GREEN REPLAY COUNTER DISC (REPLAY VALUES) FOR SCORING. (DIAG. F-20)

THRU WIPERS (A) CIRCUITS TO ENERGIZE MIXER #4 RELAY FOR GAME PROPORTIONING. (DIAG. I-31)

THRU FEED RING, FEED FOR WIPERS (J)

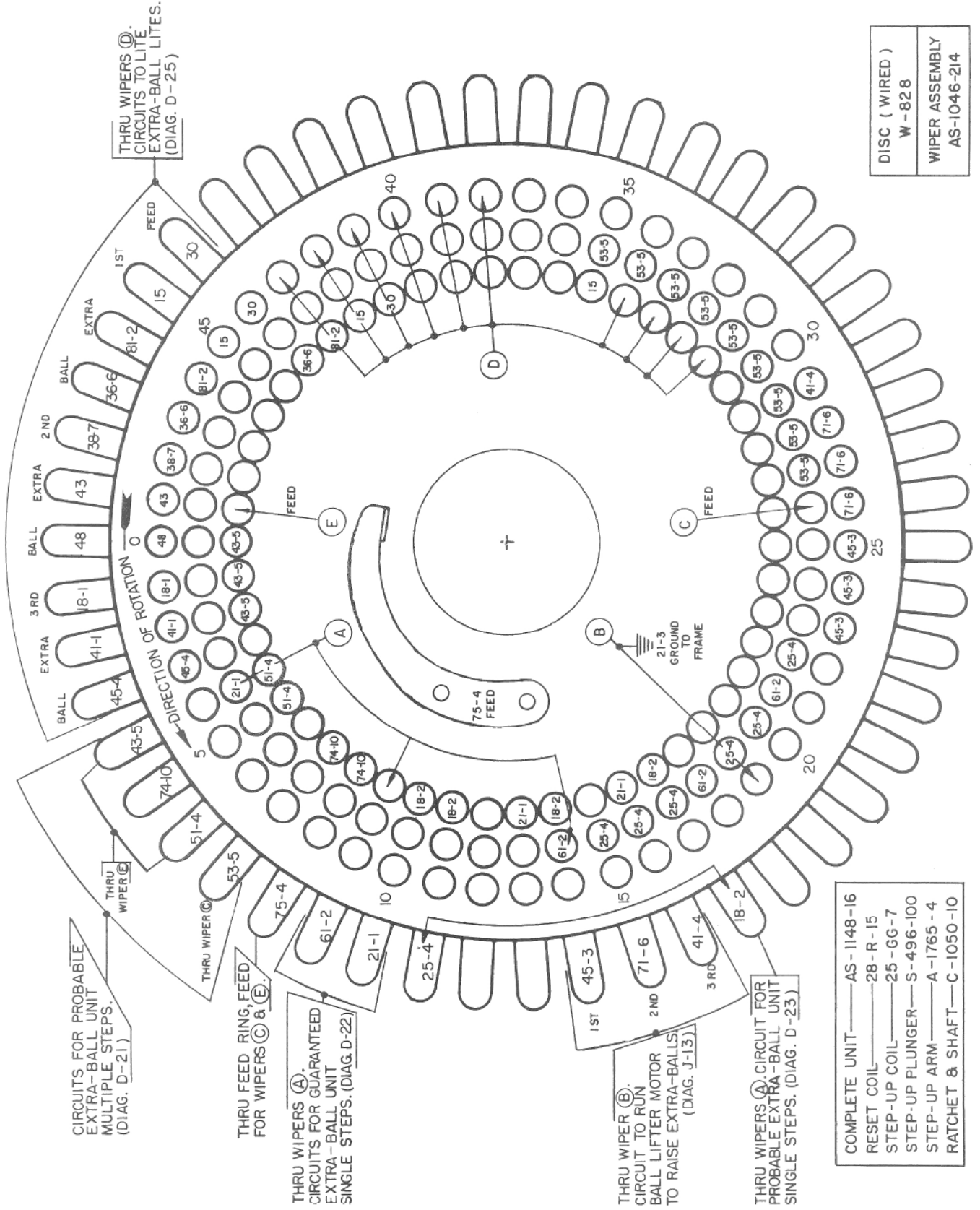
THRU WIPERS (A) CIRCUIT TO ENERGIZE MIXER #4 RELAY FOR GAME PROPORTIONING. (DIAG. I-32)

THRU WIPER (A) CIRCUITS TO LITE GREEN SCORE LITES. (DIAG. L-21)

THRU WIPER (B) OR (C) CIRCUITS TO GREEN REPLAY COUNTER DISC (REPLAY VALUES) FOR SCORING. (DIAG. F-19)

EXTRA BALL UNIT viewed from BUTTON or WIPER side

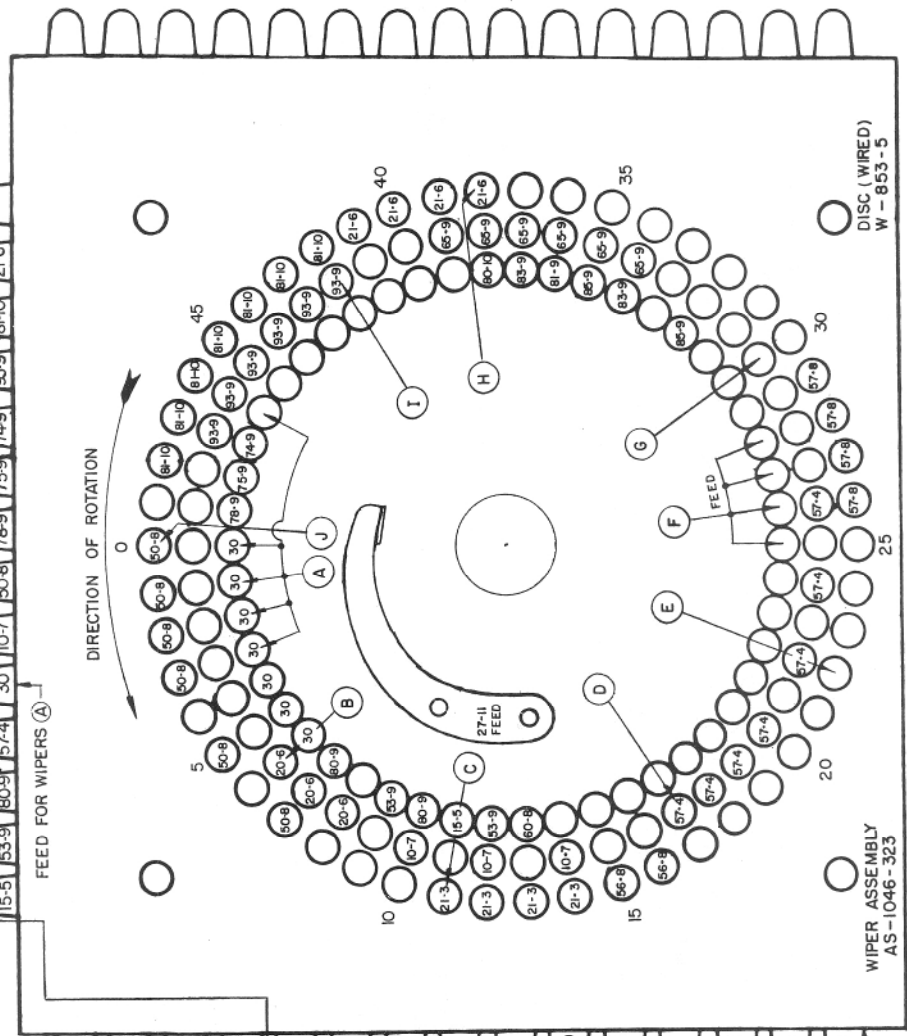
10 step unit. Wipers shown in zero or reset position



MAGIC NUMBER FEATURE UNIT viewed from BUTTON or WIPER side 10 step unit. Wipers shown in zero or reset position

THRU WIPER (B) CIRCUIT FOR GUARANTEED MAGIC-NUMBER FEATURE UNIT SINGLE STEPS. (DIAG. C-32)
 THRU WIPER (D) CIRCUIT FOR PROBABLE MAGIC-NUMBER FEATURE UNIT MULTIPLE STEPS. (DIAG. C-33)
 THRU WIPERS (A) CIRCUITS TO LITE MAGIC-NUMBER FEATURE ARROW LITES. (DIAG. L-5)
 THRU WIPERS (A) CIRCUITS TO LITE MAGIC-NUMBER FEATURE ARROW LITES. (DIAG. L-5)
 THRU WIPER (I) CIRCUIT FOR PROBABLE MAGIC-NUMBER FEATURE UNIT MULTIPLE STEPS. (DIAG. C-33)
 THRU WIPER (H) PROBABLE CIRCUITS TO ENERGIZE SUPER-LINE FEATURE TRIP RELAY. (DIAG. B-27)

THRU WIPERS (A) CIRCUITS TO LITE MAGIC-NUMBER FEATURE LITES. (DIAG. L-6)



- (B) 52-5
- (C) 65-8
- (D) (I) (J) 23-4
- (H) 61-10
- "D" 60-8
- 20-6
- "A" 65-9
- "B" 83-9
- "C" 81-9
- "D" 80-10
- 27-11
- THRU FEED RING, FEED FOR WIPERS (F) 27-11
- 21-3
- 56-8
- 57-8
- 65-9

THRU WIPER (B) CIRCUIT FOR PROBABLE MAGIC-NUMBER FEATURE UNIT SINGLE STEPS. (DIAG. C-32)

THRU WIPERS (F) CIRCUITS TO ENERGIZE MAGIC-NUMBER INDEX COILS TO MOVE MAGIC-NUMBERS. (DIAG. G-41)

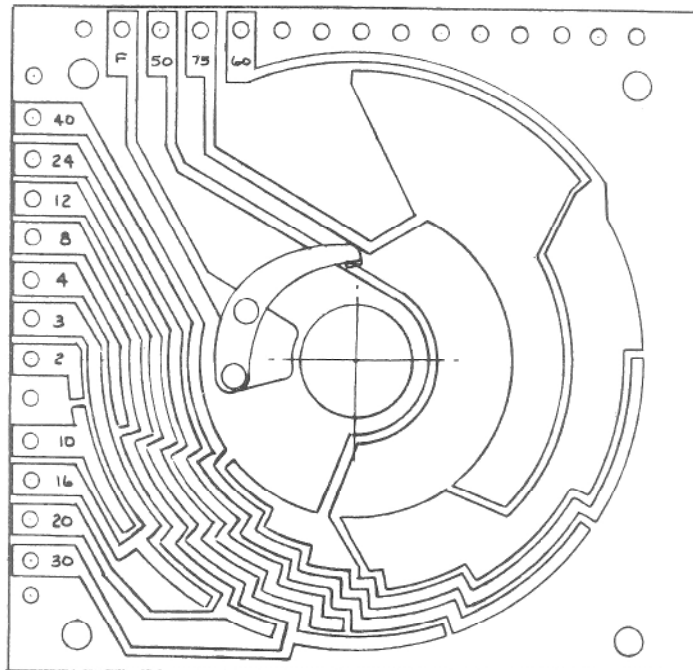
THRU WIPER (C) OR (G) CIRCUITS TO ENERGIZE MIXER #2 RELAY FOR GAME PROPOR-TIONING. (DIAG. H-24)

COMPLETE UNIT	AS-827-114
RESET COIL	28-R-15
STEP-UP COIL	25-GG-7
STEP-UP PLUNGER	S-496-100
STEP-UP ARM	A-1765-4
RATCHET & SHAFT	C-1050-10-41

REPLAY COUNTER viewed from WIPER side **3** used (see code box at left)

REPLAY VALUES	YELLOW REPLAY COUNTER	RED REPLAY COUNTER	GREEN REPLAY COUNTER
2	27-6	80-6	20-7
3	45-6	14-7	48-7
4	53-6	27-7	50-7
8	63-6	31-7	51-7
10	75-6	36-7	57-7
12	81-1	74-2	41-3
16	93-1	83-2	43-3
20	23-2	85-2	48-3
24	40-2	10-3	60-3
30	41-2	20-3	63-3
40	51-2	21-9	65-3
50	52-5	25-3	74-3
60	57-2	40-3	80-3
75	50-6	52-6	54-6
F	85	71	91

WIRE COLOR NUMBERS



- COMPLETE UNIT — AS-797-59
- RESET COIL — 28-R-15
- STEP-UP COIL — 25-66-7
- STEP-UP PLUNGER — S-496-116
- STEP-UP ARM — A-1765-4
- RATCHET & SHAFT — C-100

- DISC W-728-2
- WIPER ASSY. AS-1046-143

CONTROL UNIT MULTIPLIER CAM SWITCHES THAT PULSE YELLOW, RED, AND GREEN REPLAY COUNTER UNIT STEP-UP COILS.

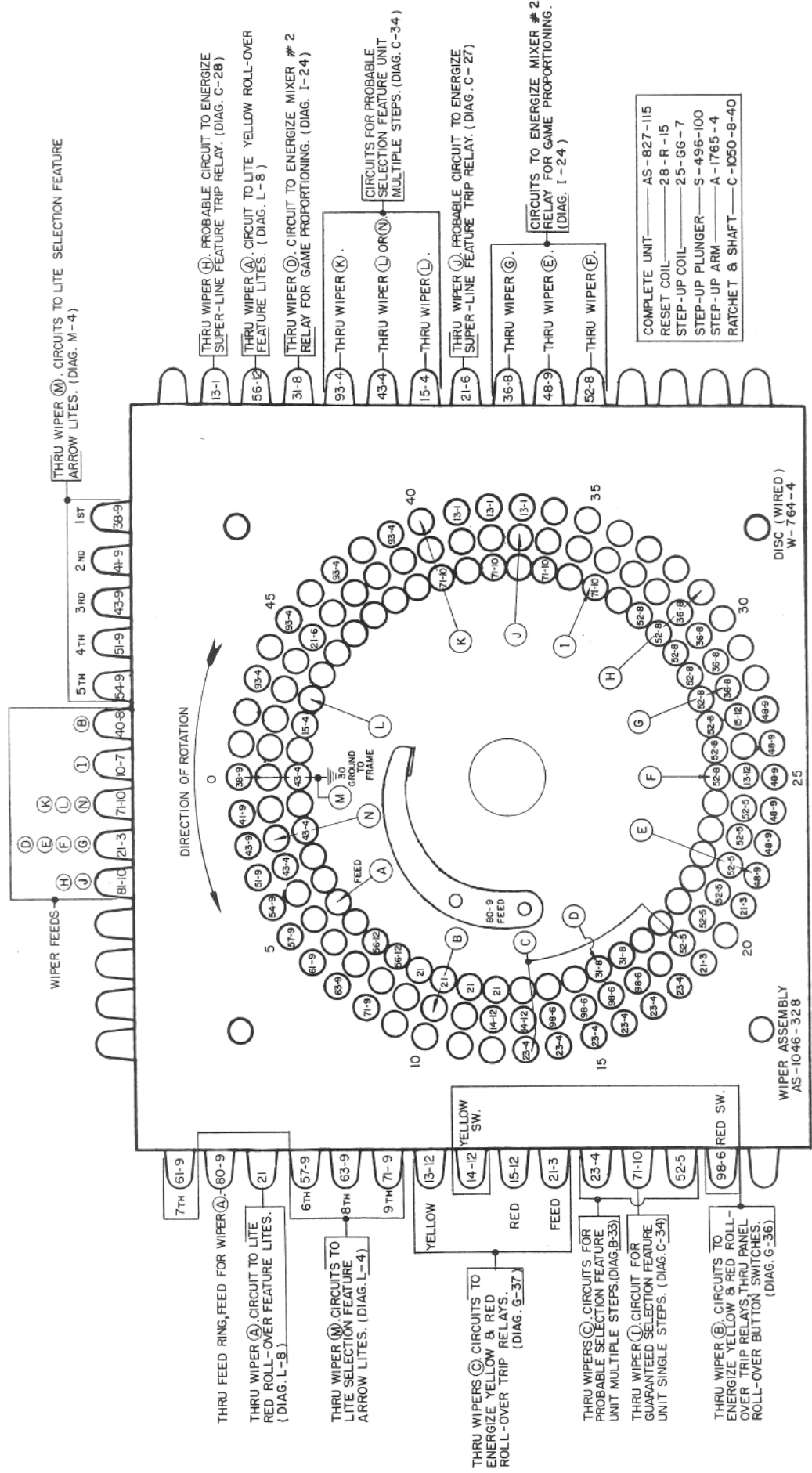
	SW. 10A	SW. 10A	SW. 10A	SW. 10A	SW. 11A	SW. 12A	SW. 14A	SW. 14A
SUPER 5-IN-LINE	150 (75)	150 (75)	192 (NOTE)	192 (NOTE)	384 (NOTE)	600 (75)	960 (60)	1200 (75)
STANDARD 5-IN-LINE OR SUPER 4-IN-LINE	80 (40)	80 (40)	100 (50)	100 (50)	200 (50)	320 (40)	480 (30)	640 (40)
STANDARD 4-IN-LINE OR SUPER 3-IN-LINE	16 (8)	20 (10)	24 (12)	48 (24)	96 (24)	160 (20)	256 (16)	480 (30)
STANDARD 3-IN-LINE	4 (2)	6 (3)	8 (4)	16 (8)	32 (8)	64 (8)	128 (8)	192 (12)

LARGE NUMBERS ARE REPLAY SCORES SHOWN ON BACK GLASS. NUMBERS IN CIRCLES INDICATE THE REPLAY VALUE EACH REPLAY SCORE IS EFFECTIVE THRU.

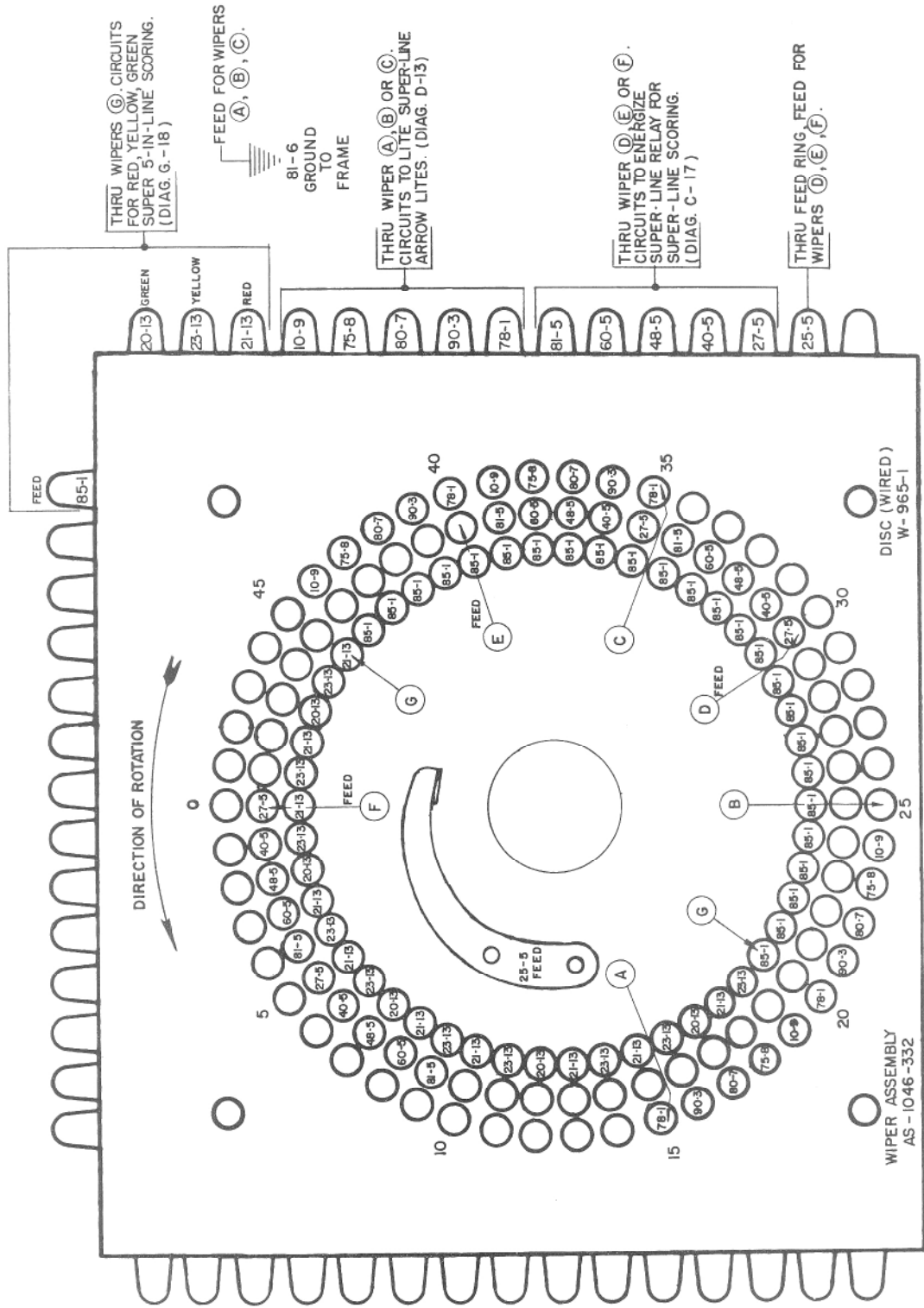
EXAMPLE:

A STANDARD 3-IN-LINE SCORE OF **64** REPLAYS IS EFFECTIVE THRU THE **8** REPLAY VALUE

NOTE IN CIRCLES: 192 & 384 REPLAY SCORES ARE EFFECTIVE THRU OPEN AT 96 REPLAY COUNTER UNIT SWITCHES.



SUPER-LINE SELECTOR UNIT DISC viewed from BUTTON or WIPER side Continuous step unit. Wipers shown in zero or reset position



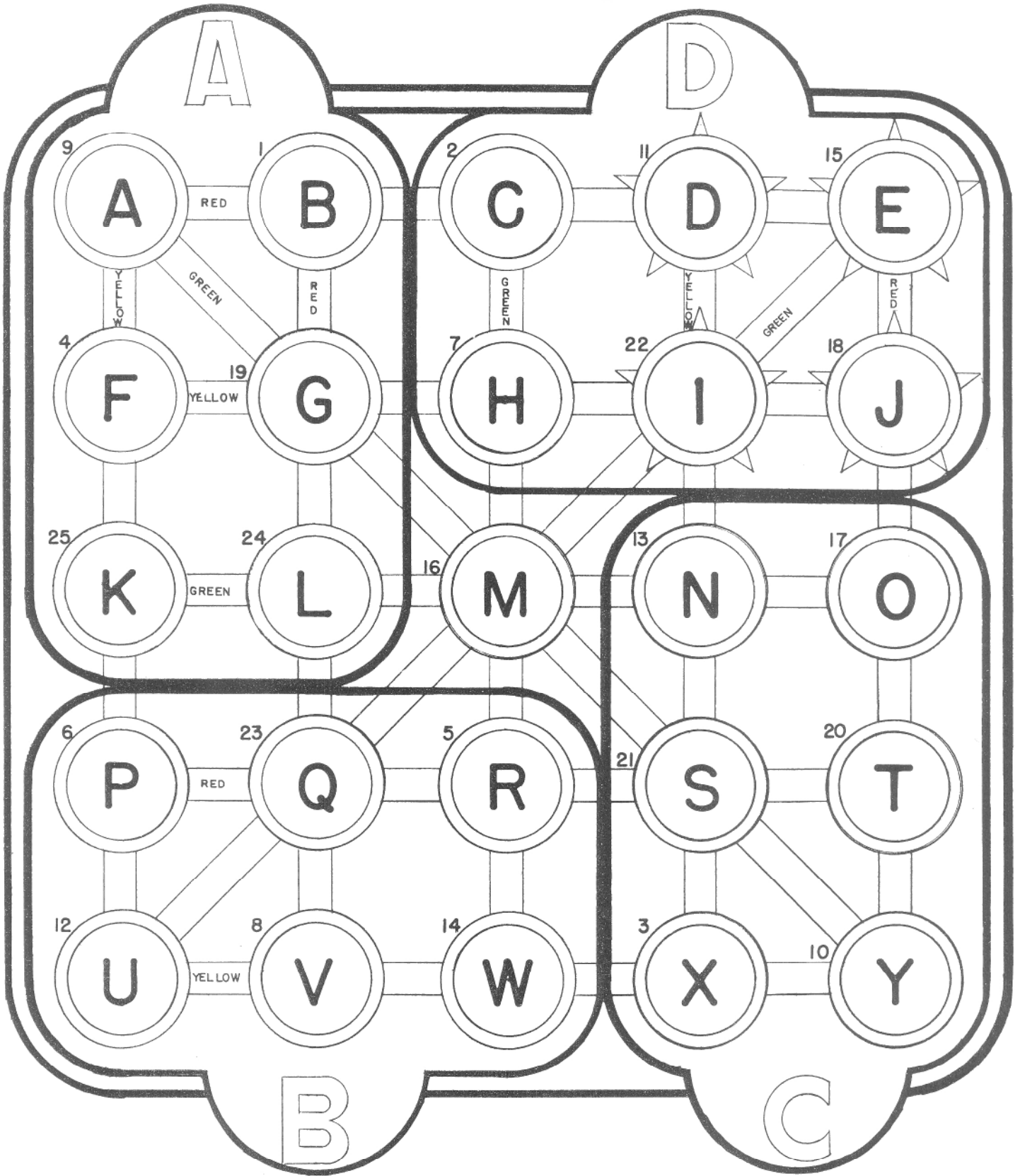
- COMPLET UNIT — AS-1558-18
- STEP-UP COIL — 27-GG-13
- STEP-UP PLUNGER — S-496-100
- STEP-UP ARM — A-1765
- RATCHET & SHAFT — C-1050

SEARCH POSITIONS CHART

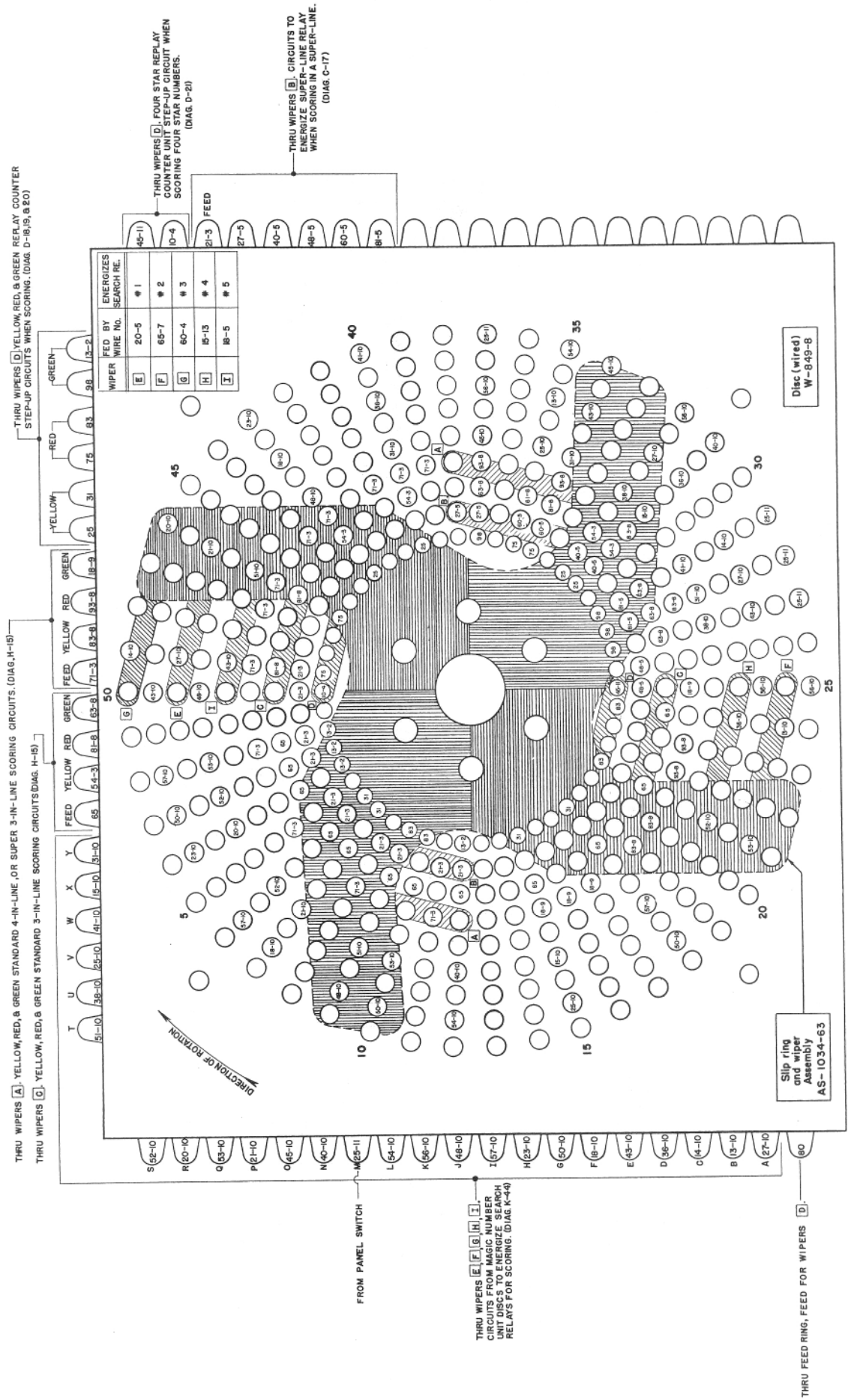
	WIPER G RED WIPER AT POSITION	WIPER E ROW 7 SEARCH RELAY # 1	WIPER F ROW 8 SEARCH RELAY # 2	WIPER G ROW 9 SEARCH RELAY # 3	WIPER H ROW 6 SEARCH RELAY # 4	WIPER I ROW 5 SEARCH RELAY # 5
	1					
	2					
	3					
	4					
	5					
	6					
	7					
	8					
	9					
	10					
	11					
	12					
	13					
	14					
	15					
	16					
	17					
	18					
	19					
	20					
	21					
	22					
	23					
	24					
FOUR STARS	25	D	E	I	J	
	26					
DIAGONAL	27	E	I	M	Q	U
	28	A	G	M	S	Y
VERTICAL	29	C	H	M	R	W
	30					
VERTICAL	31	D	I	N	S	X
	32	A	F	K	P	U
	33					
VERTICAL	34	E	J	O	T	Y
	35	B	G	L	Q	V
	36					
HORIZONTAL	37	K	L	M	N	O
	38					
	39					
HORIZONTAL	40	U	V	W	X	Y
	41					
	42					
HORIZONTAL	43	F	G	H	I	J
	44					
	45					
HORIZONTAL	46	P	Q	R	S	T
	47					
	48					
HORIZONTAL	49	A	B	C	D	E
	50					

CARD LAYOUT

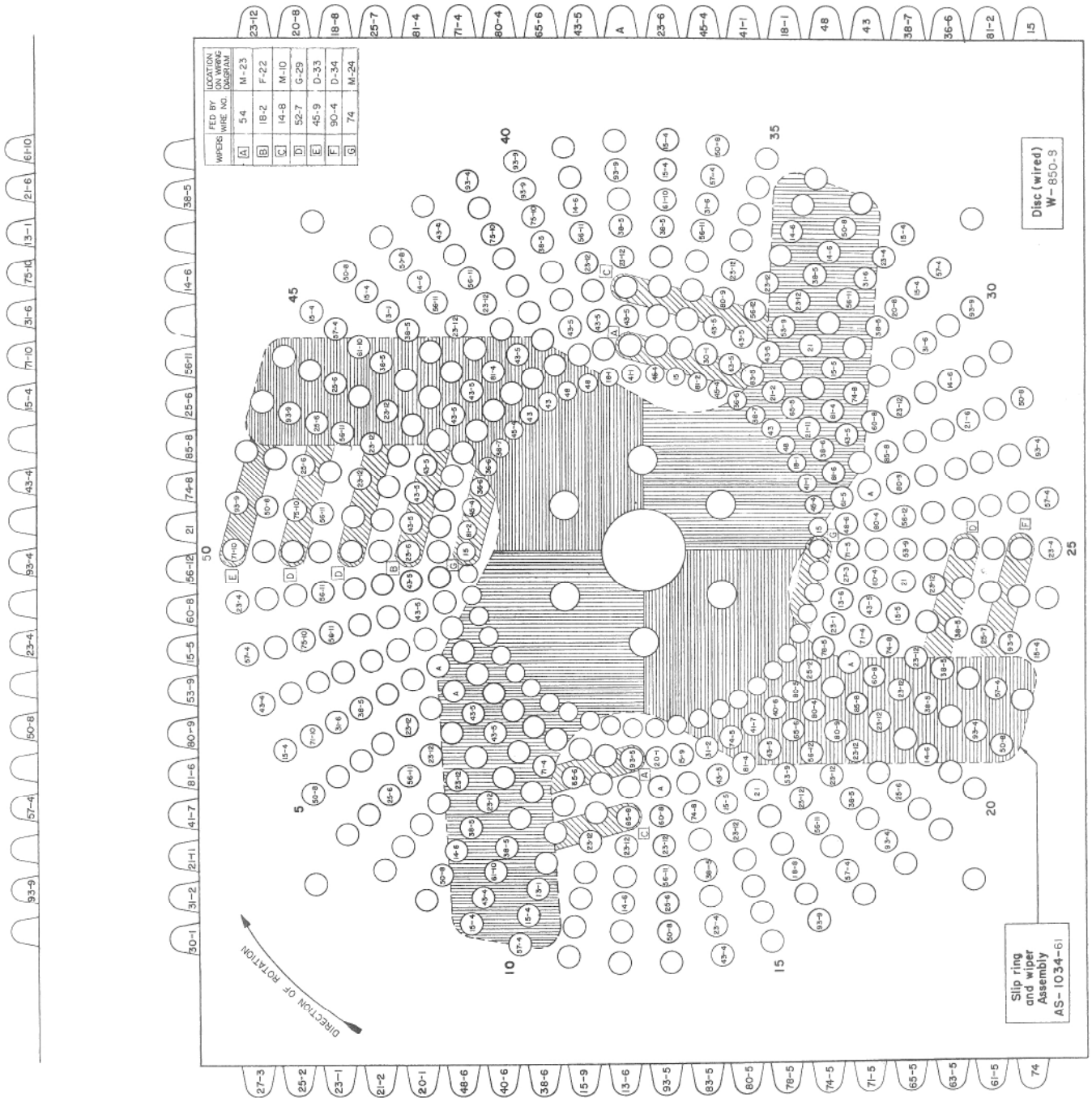
(NEUTRAL POSITION)
MAGIC NUMBERS ROTATE CLOCKWISE



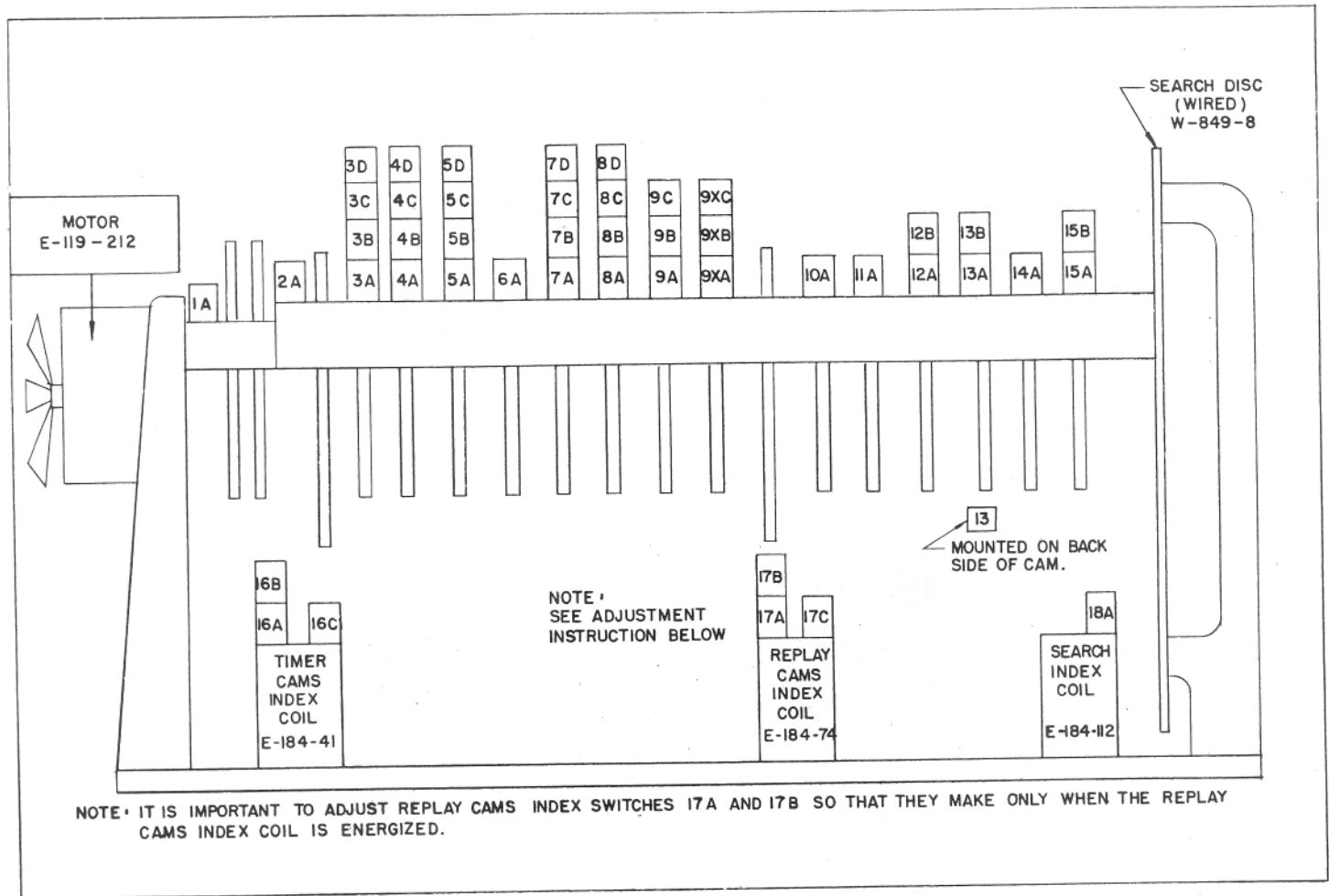
SEARCH DISC viewed from BUTTON or WIPER side



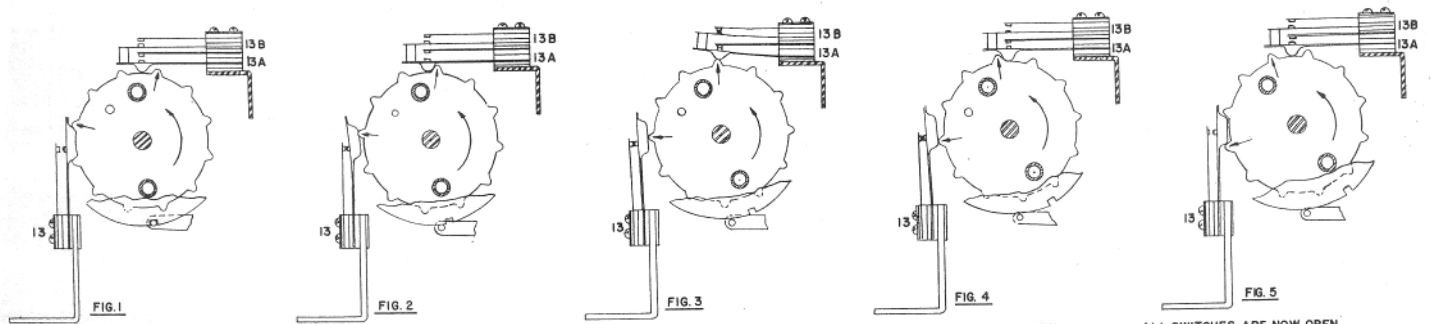
SPOTTING DISC viewed from BUTTON or WIPER side



CONTROL UNIT PICTORIAL VIEW NUMBERS CORRESPOND TO SWITCH CHART ON PAGE 17



CORRECT ADJUSTMENT: CONTROL UNIT SWITCHES 13, 13A, & 13B NOTICE: IMPORTANT PART OF ILLUSTRATION IS TO SHOW THAT SWITCH 13 CLOSSES FIRST AND OPENS LAST. IF AN ADJUSTMENT IS NECESSARY, SWITCH 13 CAN BE MOVED UP OR DOWN. LOOSEN SCREWS THAT HOLD SWITCH, THEN MOVE UP OR DOWN.



REPLAY CAMS SHOWN IN THEIR NORMAL INDEXED POSITION. SWITCHES 13A, 13B & 13 ARE OPEN AT THIS TIME.
NOTE: ARROWS POINT TO LOBES THAT WILL ACTUATE SWITCHES.

REPLAY CAMS SHOWN STARTING TO ROTATE. THEY ARE NOW OUT OF THEIR INDEX POSITION. SWITCHES 13A & 13B ARE STILL OPEN. SWITCH 13 IS NOW CLOSED.

SWITCHES 13A & 13B ARE NOW CLOSED. SWITCH 13 IS STILL CLOSED.

SWITCHES 13A & 13B ARE NOW OPEN AGAIN. SWITCH 13 IS STILL CLOSED.

ALL SWITCHES ARE NOW OPEN AGAIN, SAME AS IN FIG. 1. THIS SEQUENCE IS REPEATED THRUOUT REPLAY SCORING CYCLE.

CONTROL UNIT CAM SWITCH CHART FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW ON PAGE 16

CAM SWITCH	LOCATION ON ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
9A	Alt.	15-7 54-8	Red-White White-Green	Proportioning circuit for extra-ball unit steps.
9B	Alt.	52-5 23-4	White-Blue Blue-Yellow	Proportioning circuit for magic-number feature unit steps.
9C	Alt.	60-6 85-10	Brown Black-White	Proportioning circuit for yellow, red, and green score step.
9XA	Alt.	E-22 74-10	Green-Yellow Orange-Green	Proportioning circuit for extra-ball unit multiple steps.
9XB	Alt.	E-34 31-9	Green-White Yellow-Red	Proportioning circuit for magic-number feature unit multiple steps.
9XC	Alt.	C-26 25-7	Red-Yellow Blue-White	Proportioning circuit for four star feature trip relay.
MULT. 2:1 10A	A-21 N.O.	52 70	White-Blue Orange	Pulses yellow, red or green replay counter step-up coil, when scoring with yellow, red or green scores at 1st, 2nd, 3rd, or 4th step.
MULT. 4:1 11A	A-20 N.O.	57 70	White-Orange Orange	Pulses yellow, red, or green replay counter step-up coil when scoring with yellow, red, or green scores at 5th step.
MULT. 8:1 12A	A-19 N.O.	63 70	Brown-Yellow Orange	Pulses yellow, red, or green replay counter step-up coil when scoring with yellow, red, or green scores at 6th step.
MULT. 8:1 12B	C-21 N.O.	18 10-4	Red-Black Red	Pulses four star replay counter step-up coil when scoring four star numbers (600).
13A	N.O.	48-4 80	Green-Black Black	Pulses replay register step-up coil, reflex replay magnet coil, and replay meter when scoring.
13B	N.O.			Not Used.
(BACKSIDE OF CAM) 13	I-14 N.O.	27 21-3	Blue-Orange Blue-Red	Completes replay scoring lock-in circuit. (See control unit pictorial view for important adj. instructions)
MULT. 16:1 14A	A-18 N.O.	61-6 70	Brown-Red Orange	Pulses yellow, red or green replay counter step-up coil when scoring with yellow, red or green scores at 7th or 8th step.
15A	N.C.	53 57-11	White-Yellow White-Orange	In series with search relay switches to start replay scoring circuit.
15B	N.C.	27-2 90-2	Blue-Orange Gray	Opens timer unit step-up circuit during replay scoring.
TIMBER CAMS INDEX COIL 16A	A-7 N.O.	93-2 70	Gray-Yellow Orange	Energized each time start relay pulls in, and releases timer cams for spin.
16B	N.C.	60P 20P	Brown(Plastic) Blue(Plastic)	Completes a circuit to run control unit, and mixer-sporting unit motors.
16C	N.C.	27-9 71-2	Blue-Orange Orange-Red	Opens circuit to coin lock-out magnet coil (so coins or replays can not be played during spin).
16C	N.C.	H-12 30	Yellow Red-Yellow	Opens circuit to red button relay, and extra-ball trip relays during spin.
REPLAY CAMS INDEX COIL 17A	A-14 N.O.	40-4 70	Green Orange	Energized by search index switch 18A when a scoring circuit is completed, and releases replay cams to register score.
17B	N.O.	G-14 80	Blue-Orange Black	In series with replay scoring lock-in circuit. (See control unit pictorial view for correct adj.)
17C	N.C.	J-15 53	White-Orange White-Yellow	Same function as 17A above.
17C	N.C.	C-13 80	Black Red-White	Opens direct 50 volt circuit to search index coil, coil then held in thru resistor.

CAM SWITCH	LOCATION ON ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
1A	N.O.	36-9 65-2	Yellow-Brown Brown-White	Pulses timer unit step-up coil after 5th ball is shot.
2A	N.O.	90-5 30	Gray Yellow	Pulses reflex play magnet coil, replay register unit reset coil, and total plays meter.
3A	N.C.	48-2 30	Green-Black Yellow	Opens circuit to start relay.
3B	S.P.D.T.	60-13 57-13 75-13	Brown White-Orange Orange-White	Directs circuit to energize, and lock-in play blue features relay.
3C	S.P.D.T.	74-16 81-13 75-13	Orange-Green Black-Red Orange-White	Directs circuit to energize, and lock-in play orange features relay.
3D	S.P.D.T.	93-7 98-4 91-7	Gray-Yellow Gray-Black Gray-Red	Directs circuit to pulse replay meter or total play meter.
4A	N.O.	98-1 30	Gray-Black Yellow	Energizes spotting cams index coil.
4B	N.O.	56-5 30	White-Brown Yellow	Energizes score extra-step index coil.
4C	N.O.	80-9 27-2	Black Blue-Orange	Pulses coin meter (when coin meter is used).
4D	S.P.D.T.	13-9 90-9 14-5	Red-Yellow Gray Red-Black	(Safety circuit) opens circuit to start relay, and completes a circuit to energize tilt relay if coin switch closed too long.
5A	N.O.	65-2 83-1	Brown-White Black-Yellow	Completes a circuit to reset timer unit when playing for extra-balls.
5B	N.O.	38-4 21-1	Yellow-Black Black-Red	Completes circuit for extra-ball unit guaranteed single steps.
5C	N.O.	78-4 91-11	Orange-Black Gray-Red	Completes circuit to energize anti-cheat relay.
5D	N.O.	10-7 85-4	Red Black-White	Completes circuit for magic number unit, and selection feature unit guaranteed single steps.
5E	N.C.	40-15 75-13	Green Orange-White	Opens lock-in circuit for orange features lock relay, or blue features lock relay.
6A	N.C.	75-5 51-5	Orange-White White-Red	(During spin) opens circuit for magic-number unit, selection feature unit, and extra-ball unit steps.
7A	N.O.	45-2 23	Green-White Blue-Yellow	Completes circuit for yellow, red, and green score unit guaranteed single steps.
7B	N.O.	52-7 60-6	White-Blue Brown	Thru mixer #4, completes circuit for yellow, red, and green score unit step when playing blue button.
7C	N.O.	60-6 40-9	Brown Green	Thru mixer #3, completes circuit for yellow, red, and green score unit step.
7D	N.O.	75-13 43-13	Orange-White Green-Yellow	Completes circuit to energize blue features lock relay when playing blue button, or orange features lock relay when playing orange button.
8A	N.O.	13-3 23	Red-Yellow Blue-Yellow	Completes circuit for yellow, red, and green score unit guaranteed single steps when playing blue button.
8B	N.O.	38-4 25-4	Yellow-Black Blue-White	Completes circuit for extra-ball unit single steps.
8C	N.O.	20-6 10-2	Blue Red	Completes circuit for magic-numbers feature unit single steps.
8D	N.O.	63-4 61-4	Brown-Yellow Brown-Red	Completes circuit for yellow, red, and green score unit step when playing blue button.

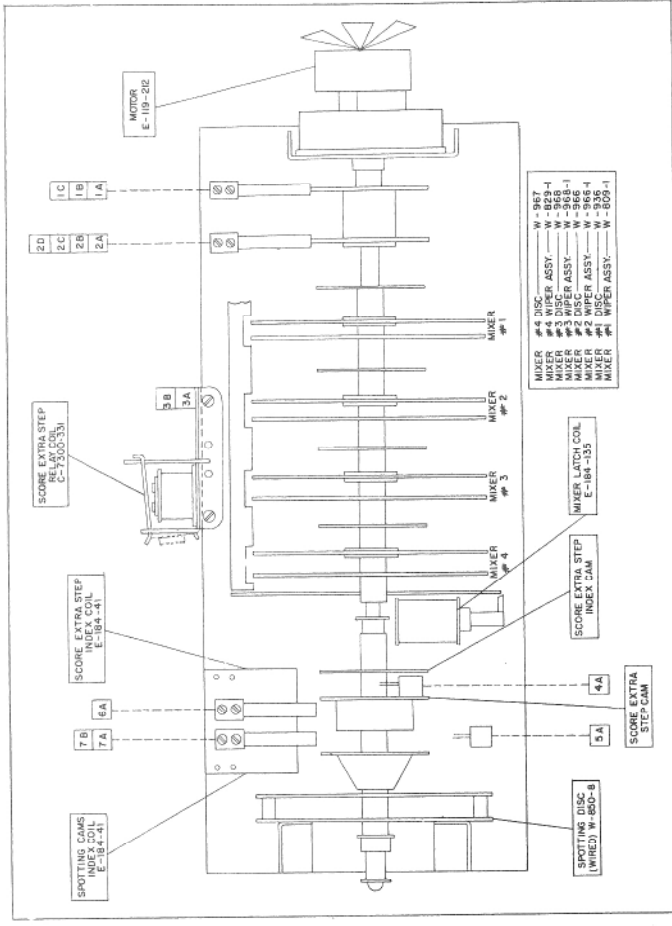
CONTROL UNIT CAM SWITCH CHART

FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW ON PAGE 16

CAM SWITCH	LOCATION ON ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
SEARCH INDEX COIL 18A N.O.	A-14 C-14	15-2 70 80 40-4	Red-White Orange Black Green	Energized thru search disc when a scoring circuit is completed, and stops search wipers at scoring position. Completes circuit to replay cams index coil.
SEARCH WIPER LOCK MAGNET COIL	A-43	23-16 70	Blue-Yellow Orange	(Not shown on pictorial view) energized by front rail "R" button when circuit complete thru other factors, and releases search wipers to search for scores.
SEARCH WIPER CAM 19A N.C.	B-5	13-16 83-8	Red-Yellow Black-Yellow	(Not shown on pictorial view) opens circuit to start relay during search for scores.
SEARCH WIPER CAM 19B N.C.	H-41	91-5 45-5	Gray-Red Green-White	(Not shown on pictorial view) opens circuit to magic-number buttons during search for scores.
SEARCH WIPER CAM 19C N.C.	D-42	23-16 52-9	Blue-Yellow White-Blue	(Not shown on pictorial view) opens circuit to search wiper lock-magnet coil after it has been energized.

MIXER AND SPOTTING UNIT ASSEMBLY

NUMBERS CORRESPOND TO SWITCH CHART BELOW



MIXER AND SPOTTING UNIT CAM SWITCH CHART

FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW ABOVE

CAM SWITCH	LOCATION ON ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
8 PULSE 1A N.O.	C-22	38-4 70	Yellow-Black Orange	Pulses extra-ball unit step-up coil for multiple steps.
8 PULSE 1B N.O.	C-21	56 18-11	White-Brown Red-Black	Pulses four star replay counter unit step-up coil to return unit to zero when starting new game.
8 PULSE 1C N.O.	G-39	14-9 61	Red-Green Brown-Red	Pulses super-line selector unit step-up coil when selecting super-line. Also pulses red score unit step-up coil when 16 hole feature is hit.
16 PULSE 2A N.O.	L-11	43-7 54-7	Green-Yellow White-Green	Flashes 16 hole feature lite when 16 hole feature is in play. Also flashes press E button now lite when super-line is in play.
16 PULSE 2B N.O.	K-2	80-9 90	Black Gray	Flashes press A-B-C-D buttons now lite when magic-numbers feature is in play.
16 PULSE 2C N.O.	D-3	53-7 75-2	White-Yellow Orange-White	Pulses replay register unit reset coil when replay-reset relay is energized.
16 PULSE 2D N.O.	E-33	10-2 45-9	Red Green-White	Pulses magic-number feature unit, and selection feature unit for multiple steps.

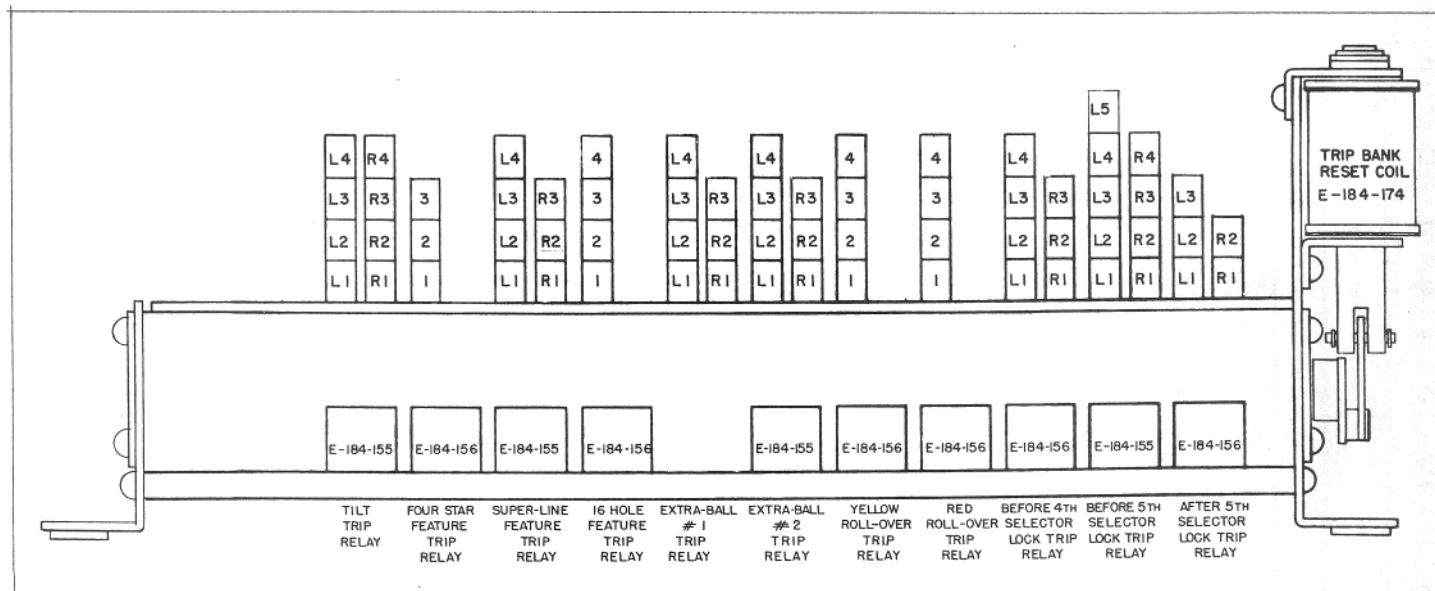
CONCLUDED ON NEXT PAGE

MIXER AND SPOTTING UNIT CAM SWITCH CHART

FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW ON PAGE 18

CAM SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
SCORE EXTRA STEP RELAY COIL	A-9	43-6 70	Green-Yellow Orange	Energized by red, yellow, or green score unit step-up arm switches.
3A N.O.	B-10	43-6 81-3	Green-Yellow Black-Red	Lock-in circuit for this relay.
3B N.O.	D-27	25-9 50-4	Blue-White White	In series with circuit for probable red, yellow, or green score unit multiple steps.
SCORE EXTRA STEP PULSE SWITCH 4A N.O.	E-27	43-11 50-4	Green-Yellow White	Pulses yellow, red, and green score units for multiple steps when circuit complete thru all other factors.
SQUARE PIN SWITCH 5A N.C.	D-10	13-5 21-3	Red-Yellow Blue-Red	Opens score extra-step relay lock-in circuit.
SCORE EXTRA STEP INDEX COIL 6A N.O.	A-44	56-5 70	White-Brown Orange	Energized by control unit cam switch 4B.
6A N.O.	C-10	13-5 81-3	Red-Yellow Black-Red	In series with score extra-step relay lock-in circuit.
SPOTTING CAMS	A-50	98-1 70	Gray-Black Orange	Energized by control unit cam switch 4A.
INDEX COIL 7A N.O.	K-10	45-7 30	Green-White Yellow	Flashes all orange feature lites.
7B N.O.	K-23	13-4 30	Red-Yellow Yellow	Flashes all blue feature lites, and score lites. Also flashes extra-ball lites during extra-ball play.

TRIP RELAY BANK PICTORIAL VIEW NUMBERS CORRESPOND TO SWITCH CHART ON PAGE 20



TRIP RELAY BANK CHART FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW ON PAGE 19

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
TILT TRIP RELAY COIL L1	A-11	14-5 70	Red-Green Orange	Energized by any tilt switch. Also thru control unit cam switch 4D, if coin switch is closed too long.
L2	B-4	20-4 10	Blue Red	Opens 17 volt circuit.
L3	M-29	83-3 13-16	Black-Yellow Red-Yellow-Black	Completes circuit to start new game, if previous game was tilted during search cycle.
L4	N.C.	54-2 91-2	White-Green Gray-Red	Opens 6 volt lite circuit, and completes circuit to tilt lite.
R1	N.C.	60P 30P	Brown(Plastic) Yellow (Plastic)	Opens circuit to control unit, and mixer-sporting unit motors.
R2	N.O.	40-8 98-9	Gray Green	Opens circuit to magic-number buttons (A-B-C-D), super-line button (E), and collect scores button (R).
R3	S.P.D.T.	85-7 57-6	Black-White White-Orange	Completes a circuit to energize red button relay.
R4	N.C.	21-3 30 45-8	Blue-Red Yellow Green-White	Opens circuit to this coil. Also opens game advantage, playing, scoring circuits, and completes circuit to close shutter if game is tilted with shutter open.
FOUR STAR FEATURE TRIP RELAY COIL	I-38	48-11 41-11	Green-Black Green-Red	Opens circuit to red score run relay.
1	N.C.	13-7 70	Red-Yellow Orange	Energized thru spotting unit disc, when circuit complete thru other factors.
2	N.O.	13-7 71-3	Red-Yellow Red-Yellow	Opens circuit to coil.
3	N.O.	31-19 30	Orange-Red Yellow	In series with circuit for scoring four star numbers (600).
SUPER LINE FEATURE TRIP RELAY COIL	B-27	83-10 70	Black-Yellow Orange	Lites four star numbers score 600 feature lite.
L1	N.C.	83-10 83-10	Black-Yellow Black-Yellow	Energized thru spotting unit disc, when circuit complete thru other factors.
L2	N.C.	10-2 36-4	Red Yellow-Brown	Opens circuit to coil.
L3	N.O.	60-2 90-19	Brown Brown	Proportioning circuit against magic-number, and selection feature unit steps.
L4	N.O.	81-6 90-19	Black-Red Gray	Lites super-line feature lite.
R1	N.C.	45 56-6	Green-White White-Brown	In series with circuit to step super-line selector unit.
R2	N.O.	61-7 43-7	Brown-Red Green-Yellow	Proportioning circuit against yellow, red, green score steps, 4 star feature, 16 hole feature, and extra-ball steps.
R3	N.O.	93 25-5	Gray-Yellow Blue-White	In series with circuit to flash press E-Button now lites.
16 HOLE FEATURE TRIP RELAY COIL	B-26	31-6 70	Yellow-Red Orange	In series with circuit to energize super-line relay, when scoring in super-lines.
1	N.C.	31-6 31-6	Yellow-Red Yellow-Red	Energized thru spotting unit disc, when circuit complete thru other factors.
2	N.O.	41-7 43-7	Green-Red Green-Yellow	Opens circuit to coil.
3	N.O.	18-4 81-10	Red-Black Black-Red	Lites 16 hole feature lite.
4	N.O.	38-2 91-3	Yellow-Black Gray-Red	In series with circuit to energize red score run relay.
				In series circuit to energize mixer #4 relay for game proportioning.

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
EXTRA-BALL #1 TRIP RELAY	N.C.	91-11 85-4	Gray-Red Black-White	Trips with extra-ball #2 relay.
L2	N.O.	21-4 50-9	Blue-Red White	In series with circuit to energize anti-cheat relay.
L3	S.P.D.T.	75-5 15-7 36-5	Orange-White Red-White Yellow-Brown	Completes circuit to lite extra-balls feature lite.
L4	S.P.D.T.	21-3 98-5 75-5	Blue-Red Gray-Black Orange-White	Opens circuit for score steps, and other blue button features, and completes circuit for extra-ball steps.
R1	N.O.	83-1 71-8	Black-Yellow Orange-Red	(Game proportioning) directs circuits to energize mixer #4 relay.
R2	S.P.D.T.	85-4 30	Black-White Yellow	In series with circuit to reset timer unit while playing extra-balls.
R3	S.P.D.T.	61-2 60-6 45 18-2	Brown-Red Brown Green-White Red-Black	Opens guaranteed score steps circuit, and completes guaranteed extra-ball steps circuit.
EXTRA-BALL #2 TRIP RELAY COIL	A-12	10-6 70	Red Orange	Same function as switch L3 above.
L1	N.C.	10-6 10-6	Red Red	Energized by yellow button switch when playing extra-balls.
L2	N.O.	38-3 91-1	Yellow-Black Gray-Red	Opens circuit to coil.
L3	S.P.D.T.	31-5 13-4 7-4	Yellow-Red Red-Yellow Orange-Green	In series with circuit to run ball lifter motor to raise extra-balls.
L4	N.C.	52-11 45-7	White-Blue Green-White	Opens circuit to flash score, four star feature, 16 hole feature, and super line feature lites, and completes circuit to flash extra-ball feature lites.
R1	N.C.	83-4 61-8	Black-Yellow Brown-Red	Opens circuit to flash magic-numbers feature, red and yellow rollover feature, select before 5th, and select after 5th feature lites.
R2	S.P.D.T.	14-3 65-11 98-2	Red-Green Brown-Yellow Gray-Black	Opens circuit for magic-numbers and selection feature unit steps.
R3	N.O.	1-27 56-6	White-Green White-Brown	Opens circuit to run shutter motor when starting new game, and completes circuit to energize mixer latch, and timer cams index coil during extra-ball play.
YELLOW ROLLOVER TRIP RELAY COIL	A-36	38-13 70	Yellow-Black Orange	In series with proportioning circuit for extra-ball steps.
1	N.C.	38-13 38-13	Yellow-Black Yellow-Black	Energized by yellow rollover button switch thru selection feature disc, or directly thru selection feature disc.
2	N.O.	15-11 98-9	Red-White Gray-Black	Opens circuit to coil.
3	S.P.D.T.	10-5 53-2	Red White-Yellow	Completes circuit to move magic-numbers until 5th ball is shot.
4	S.P.D.T.	23-5 50-5 7-4-8	Blue-Yellow White Orange-Green	Directs circuit to flash press A-B-C-D buttons now lite before shooting 4th or before shooting 5th ball.
RED ROLLOVER TRIP RELAY COIL	A-37	25-13 70	Blue-White Orange	Directs circuit to lite press A-B-C-D buttons before shooting 4th ball or before shooting 5th ball feature lite.
1	N.C.	25-13 25-13	Blue-White Blue-White	Energized by yellow rollover button switch thru selection feature disc, or directly thru selection feature disc.
2	N.O.	45-5 98-9	Green-White Gray-Black	Opens circuit to coil.
3	S.P.D.T.	53-2 90	White-Yellow Gray	Completes circuit to move magic-numbers until 6th ball (1st extra-ball) is shot.
4	S.P.D.T.	78-2 50-5 80-9 85-8	Orange-Black White Black Black-White	Directs circuit to flash press A-B-C-D buttons now lite before shooting 4th, before shooting 5th, or after shooting 5th ball.
				Directs circuit to lite press A-B-C-D buttons before shooting 4th, before shooting 5th, or after shooting 5th ball feature lite.

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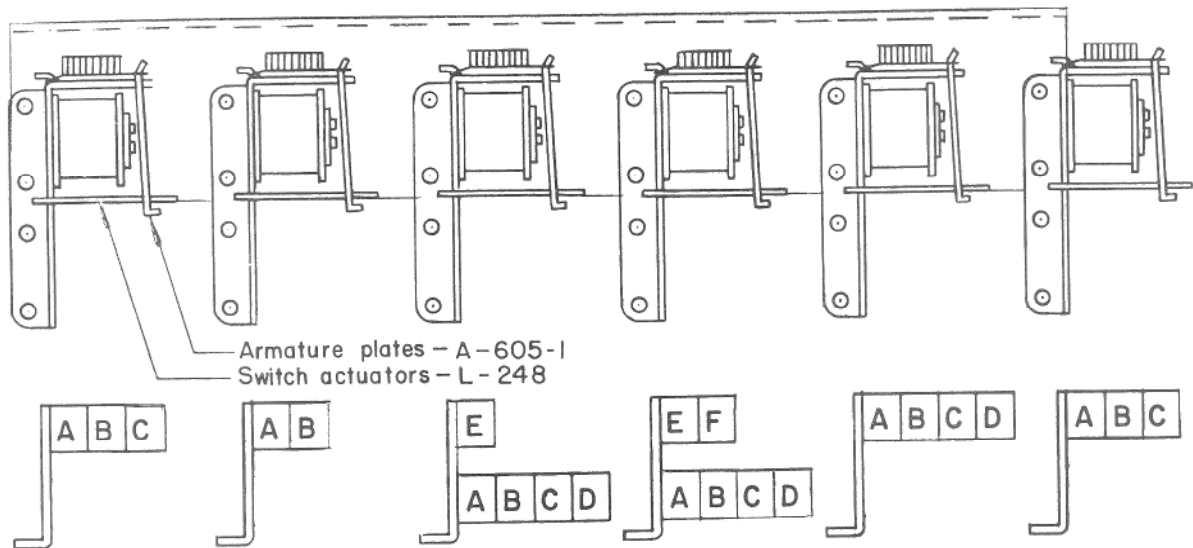
TRIP RELAY BANK CHART FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW ON PAGE 19

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
BEFORE 4th SELECTOR LOCK TRIP RELAY	A-11	83-6 70	Black-Yellow Orange	Energized thru timer disc when 4th ball is shot.
L1 N.C.	B-11	83-6	Black-Yellow	Opens circuit to coil.
L2 N.C.	K-12	83-6 34-7 30	Black-Yellow White-Green Yellow	Opens circuit to flash 16 hole feature, and press E-button now lites.
L3 S.P.D.T.	I-41	15-11 98-9	Red-White Gray-Black	Opens circuit to move magic-numbers (for select before 4th ball) and completes circuit to energize search wiper lock magnet, thru "R" button switch.
L4 N.C.	I-39	53-18 61	White-Yellow Brown-Red	Opens red score run to top, and super-line selector unit step-up circuit.
R1 N.C.	G-38	98-9 41-11 81-10	Gray-Black Green-Red Black-Red	Opens circuit to red score run relay.
R2 N.C.	L-1	27-4	Blue-Orange	Opens circuit to flash press A-B-C-D buttons now lite before shooting 4th ball.
R3 N.O.	F-8	10-5 43-2 36-2	Red Green-Yellow Yellow-Brown	In series with circuit to step timer unit from 4th to 5th step.
BEFORE 5th SELECTOR LOCK TRIP RELAY COIL	A-11	74-6 70	Orange-Green Orange	Energized thru timer disc when 5th ball is shot.
L1 N.C.	B-11	74-6	Orange-Green	Opens circuit to coil.
L2 N.O.	H-9	54-11 71-8	White-Green Orange-Red	Completes a circuit to reset timer unit thru collect scores "R" button switch.
L3 S.P.D.T.	N-1	98-3 14-1	Gray-Black Red-Green	Directs press A-B-C-D buttons now lite flash circuit before shooting 4th, before shooting 5th, or after shooting 5th ball.
L4 N.C.	C-36	75-3 13-12 38-13	Orange-White Red-Yellow Yellow-Black	Opens circuit to yellow rollover feature trip relay.
L5 N.O.	D-8	27-2 78-6	Blue-Orange Orange-Black	In series with circuit to step timer unit after 5th ball is shot.
R1 N.C.	M-8	56-12 52-12	White-Brown White-Blue	Opens circuit to yellow rollover lite on panel.
R2 N.C.	H-42	15-11 45-5	Red-White Green-White	Opens circuit to move magic-numbers. (For select before 5th ball)
R3 N.O.	E-5	18-6 50-2	Red-Black White	In series with circuit to energize start relay during extra-ball play.
R4 N.O.	E-13	25-8 10-6	Blue-White Red	In series with circuit to energize extra-ball trip relays during extra ball play.

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
AFTER 5th SELECTOR LOCK TRIP RELAY COIL	A-10	98-11 70	Gray-Black Orange	Energized when 6th ball (1st extra-ball) is shot.
L1 N.C.	B-10	98-11 98-11	Gray-Black Gray-Black	Opens circuit to coil.
L2 N.C.	M-9	41-8 21	Green-Red Blue-Red	Opens circuit to red rollover lite on panel.
L3 N.C.	D-37	15-12 25-13	Red-White Blue-White	Opens circuit to red rollover feature trip relay.
R1 N.C.	L-2	78-2 75-3	Orange-Black Orange-White	Opens flash circuit to press A-B-C-D buttons now.
R2 N.C.	G-41	27-11 91-6	Blue-Orange Gray-Red	Opens circuit to move magic-numbers.

6 RELAY BANK PICTORIAL VIEW

LETTERS CORRESPOND TO SWITCH CHART ON PAGE 23



Name	Superline re.	Red score run re.	Replay reset re.	Anti-cheat re.	Start re.	Red button re.
Coil turns & wire gauge	2300 # 33	2300 # 33	2300 # 33	2300 # 33	1800 # 33	2000 # 33
Coil resistance (nominal)	85 Ω	85 Ω	85 Ω	85 Ω	65 Ω	75 Ω
Operating voltage	50 V.	50 V.	50 V.	50 V.	50 V.	50 V.
Test voltage	37 V.	37 V.	37 V.	39 V.	32 V.	32 V.
Extension spring load	Yellow	Yellow	Clear	Yellow	Yellow	Clear
Sw. actuator stroke	3/32	3/32	3/32	3/32	3/32	3/32
Additional information	Thermaleze wire or equivalent. No wrap on coil.	Thermaleze wire or equivalent. No wrap on coil.		Thermaleze wire or equivalent. No wrap on coil.		Thermaleze wire or equivalent. No wrap on coil.
Coil part No.	C-7300-336	C-7300-336	C-7300-331	C-7300-336	C-7300-334	C-7300-3310

SPRING CODE		
Color	Part No.	Load
Clear	SP-199-13	13 oz. AT 15/16
Blue	SP-199-14	21 oz. AT 15/16
Yellow	SP-199-15	15 oz. AT 15/16
Red	SP-199-16	9 oz. AT 15/16
Green	SP-199-17	17 oz. AT 15/16

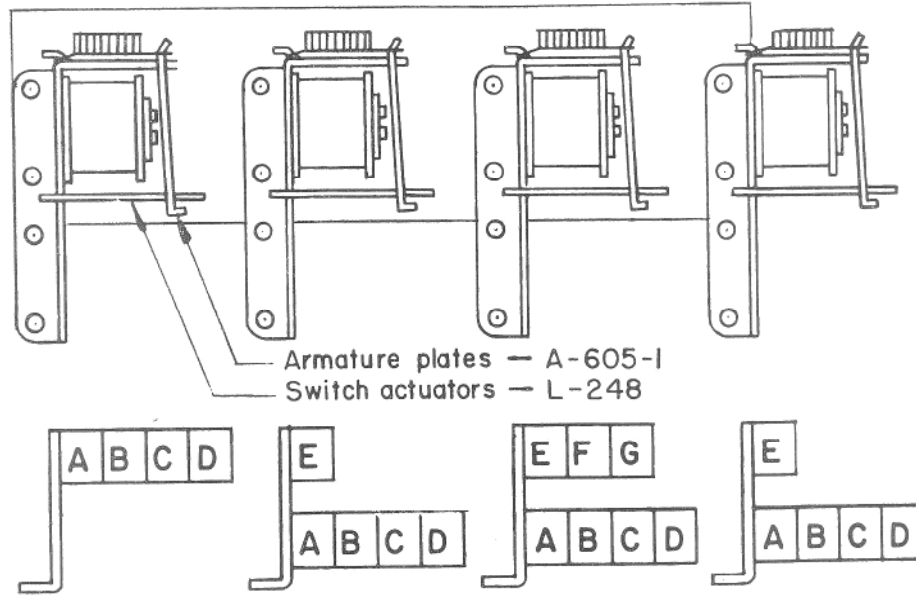
6 RELAY BANK SWITCH CHART FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW ON PAGE 22

RELAY SWITCH	LOCATION ON ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
SUPER-LINE RELAY COIL	A-47	93 70	Gray-Yellow Orange	Energized for scoring in super-lines, when super-line feature is in play.
A S.P.D.T.	H-17	71-3 74-7 61-3	Orange-Red Orange-Green Brown-Red	Directs standard 4-in-line and four star numbers scoring circuits, or super 4-in-line scoring circuits.
B S.P.D.T.	H-17	61-3 75-7 85-1	Brown-Red Orange-White Black-White	Directs standard 5-in-line scoring circuits, or super 5-in-line scoring circuits.
C N.O.	I-15	65 71-3	Brown-White Orange-Red	Completes super 3-in-line scoring circuits.
RED SCORE RUN RELAY COIL	A-38	20-2 70	Blue Orange	Energized by ball in #16 hole, when 16 hole feature is in play.
A N.O.	A-28	70	Orange	Completes circuit to advance red score unit to top.
B N.O.	D-38	13-8 14-9	Red-Yellow Red-Green	In series circuit to advance red score unit to top.
REPLAY RESET RELAY COIL	A-4	73-2 70	Orange-White Orange	Energized thru replay register zero switch when anti-cheat relay drops out.
A S.P.D.T.	B-3	90-5 41-6 53-7	Gray Green-Red White-Yellow	Directs replay register reset circuit thru control unit cam switch 3A, or thru mixer-spotting 16 pulse cam 2C.
B N.O.	H-1	60P	Brown(Plastic)	Completes a circuit to run control unit, and mixer-spotting unit motors.
C N.O.	H-3	75-2 56-2	Blue(Plastic) White-White	Completes lock-in circuit for this relay.
D N.C.	C-5	83-3	Black-Yellow	Opens circuit to start relay.
E N.O.		13-9	Red-Yellow	Not used.

RELAY SWITCH	LOCATION ON ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
ANTI-CHEAT RELAY COIL	A-25	78-4 70	Orange-Black Orange	Energized by control unit cam switch 5C, when circuit complete thru other factors.
A S.P.D.T.	M-28	91-2 38 40	Gray-Red Yellow-Black Green	Opens 6 volt circuit to score lites, and lites tilt lite, when relay drops out.
B N.O.	M-30	80-1 20-4	Black Blue	Opens 17 volt circuit when this relay drops out.
C N.O.	E-25	30 78-4	Yellow Orange-Black	Completes lock-in circuit for this relay, when energized.
D N.C.	J-7	14-14 10-10	Yellow Red-Green	(Safety circuit) completes a circuit to close shutter if this relay drops out when shutter is open.
E S.P.D.T.	H-5	75-2 56-2 50-2	Orange-White White-Brown White	Directs circuit from start relay to replay reset relay, when this relay drops out.
F N.C.	G-13	85-7 57-6	Black-White White-Orange	(Safety circuit) completes a circuit to red button relay, when this relay drops out.
START RELAY COIL	A-5	13-16 70	Red-Yellow Orange	Energized for each spin of game, playing coins or replays.
A N.O.	F-6	13-16 10-10	Red-Yellow Red	In series with circuits to run shutter motor, and energize mixer latch, and timer cams index coils.
B N.O.	H-5	48-2 13-16	Green-Black Red-Yellow	In series with function of switch A above. Also completes lock-in circuit for this relay.
C N.C.	C-22	78 75-4	Orange-Black Orange-White	Opens extra-ball step-up circuit during a spin.
D N.C.	H-32	18-7 83-4	Red-Black Black-Yellow	Opens magic-number feature, and selection feature step-up circuits during a spin.
RED BUTTON RELAY COIL	B-12	85-7 91-8	Black-White Gray-Red	Energized by red button switch on front door. Also energized when game is tilted or anti-cheat relay drops out.
A S.P.D.T.	M-3	21-4 51-15 25-15	Blue-Red White-Red Blue-White	Directs circuit from extra-ball feature lite to all scores and features lite.
B S.P.D.T.	D-7	93-2 98-2 14-3	Gray-Yellow Gray-Black Red-Green	Directs circuit from timer cams, and mixer latch coils during extra ball play, to open shutter when starting new game after extra ball play.
C N.O.	F-12	27-8 57-6	Blue-Orange White-Orange	Completes lock-in circuit for this relay.

4 RELAY BANK PICTORIAL VIEW

LETTERS CORRESPOND TO SWITCH CHART ON PAGE 25



Name	Orange features lock re.	Play orange features re.	Blue features lock re.	Play blue features re.
Coil turns & wire gauge	2300 # 33	2300 # 33	1800 # 33	2300 # 33
Coil resistance (nominal)	85 Ω	85 Ω	65 Ω	85 Ω
Operating voltage	50 V.	50 V.	50 V.	50 V.
Test voltage	37 V.	37 V.	37 V.	37 V.
Extension spring load	Yellow	Yellow	Yellow	Clear
Sw. actuator stroke	3/32	3/32	3/32	3/32
Additional information			Thermaleze wire or equivalent. No wrap on coil.	
Coil part No.	C-7300-331	C-7300-331	C-7300-339	C-7300-331

SPRING CODE		
Color	Part No.	Load
Clear	SP-199-13	13 oz. AT 15/16
Blue	SP-199-14	21 oz. AT 15/16
Yellow	SP-199-15	15 oz. AT 15/16
Red	SP-199-16	9 oz. AT 15/16
Green	SP-199-17	17 oz. AT 15/16

4 RELAY BANK SWITCH CHART FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW ON PAGE 24

RELAY SWITCH	LOCATION ON ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
ORANGE FEATURES LOCK RELAY COIL	B-44	53-14 23-11	White-Yellow Blue-Yellow	Energized by control unit cam switch 7D, when play orange features relay is energized.
A N.O.	B-45	40-15 53-14	Green White-Yellow	Completes lock-in circuit for this relay.
B N.O.	E-34	90-4 45-9	Gray Green-White	Completes probable circuits for magic-number feature, and selection feature unit steps.
C N.O.	E-34	31-9 14	Yellow-Red Red-Green	Completes probable circuit for magic-number feature steps.
D N.C.	J-32	98-5 80-8	Gray-Black Black	Proportioning circuit. (Mixer #4 relay)
PLAY ORANGE FEATURES RELAY COIL	B-46	61-13 23-11	Brown-Red Blue-Yellow	Energized by play orange features button switch when playing for orange features only.
A N.O.	C-46	81-13 61-13	Black-Red Brown-Red	Completes lock-in circuit for this relay.
B N.O.	D-44	53-14 43-14	White-Yellow Green-Yellow	Completes circuit to energize play orange features relay.
C N.C.	M-23	34 31-5	White-Green Yellow-Red	Opens circuit to flash blue features and score lites.
D N.C.	A-30	71-7 70	Orange-Red Orange	Opens circuit for blue features and score steps.
E S.P.D.T.	K-3	38-11 30 23-15	Yellow-Black Yellow Blue-Yellow	Opens circuit to yellow, red and blue button feature lites, completes circuit to orange button feature lite.

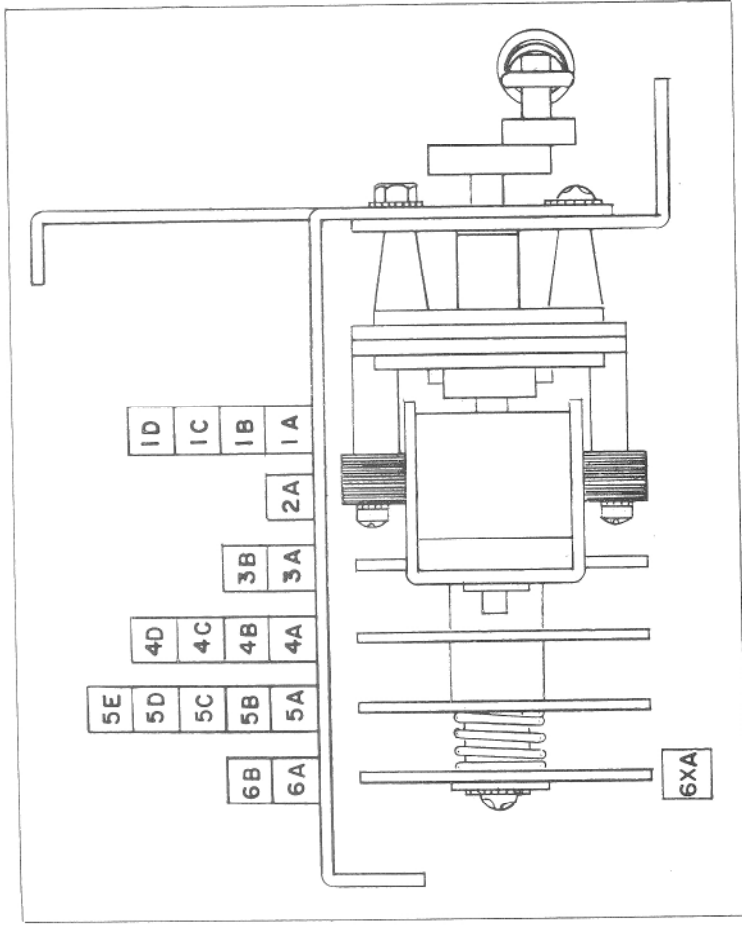
RELAY SWITCH	LOCATION ON ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
BLUE FEATURES LOCK RELAY COIL	B-45	93-14 23-11	Gray-Yellow Blue-Yellow	Energized by control unit cam switch 7D, when play blue features relay is energized.
A N.O.	G-31	63-4 85-10	Brown-Yellow Black-White	Completes probable circuit for score steps.
B N.O.	G-29	52-7 23-12	White-Blue Blue-Yellow	Completes probable circuit for score steps.
C N.O.	G-29	38-5 56-11	Yellow-Black White-Brown	Completes probable circuit for score steps.
D N.O.	G-29	14-6 25-6	Red-Green Blue-White	Completes probable circuit for score steps.
E N.C.	I-32	36-4 18-7	Yellow-Brown Red-Black	Opens circuit for orange features.
F N.O.	C-45	93-14 40-15	Gray-Yellow Green	Completes lock-in circuit for this relay.
G N.O.	F-28	61-10 75-10	Brown-Red Orange-White	Completes probable circuit for super-line feature trip relay.
PLAY BLUE FEATURES RELAY COIL	B-47	65-15 23-11	Brown-White Blue-Yellow	Energized by play blue features button switch, when playing for scores and blue features.
A N.O.	C-47	65-15 57-13	Brown-White White-Orange	Completes lock-in circuit for this relay.
B N.O.	E-25	13-3 45-2	Red-Yellow Green-White	Completes guaranteed score steps circuit.
C N.O.	D-45	93-14 43-14	Gray-Yellow Green-Yellow	Completes circuit to energize blue features lock relay.
D N.C.	L-10	52-11 14-8	White-Blue Red-Green	Opens circuit to flash orange feature lites.
E S.P.D.T.	L-3	51-15 38-11 21-15	White-Red Yellow-Black Blue-Red	Opens circuit to yellow, red, and blue button feature lites, completes circuit to orange button feature lites.

SHUTTER MOTOR CAM SWITCH CHART

FOR POSITION OF SWITCHES SEE PICTORIAL VIEW AT LEFT

SHUTTER MOTOR PICTORIAL VIEW

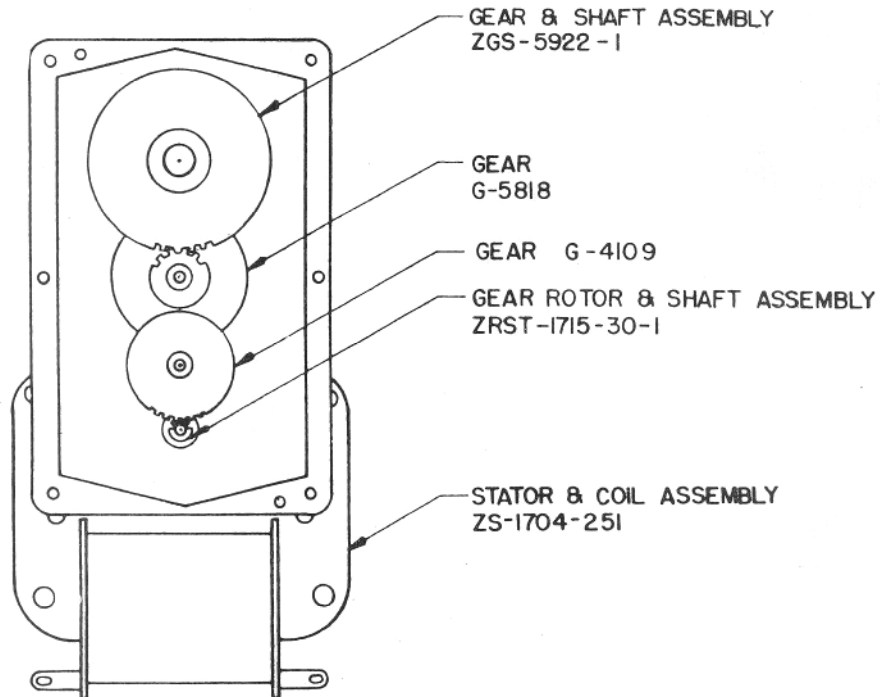
LETTERS CORRESPOND TO SWITCH CHART AT RIGHT



CAM SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
1A	N.C.	53 21-3	White-Yellow Blue-Red	(Closed when shutter closed) in series with replay scoring circuit.
1B	N.O.	75-13 21-3	Orange-White Blue-Red	(Closed when shutter open). In series with circuit to energize play blue feature relay and blue feature lock relay, or play orange features relay and orange feature lock relay.
1C	N.C.	98-8 21-3	Gray-Black Blue-Red	(Closed when shutter closed). In series with timer step-up circuit after 5th ball is shot. Also in series with circuit to reset timer unit when playing extra balls.
1D	N.O.	14-3 30	Red-Green Yellow	(Closes during shutter cycle). Completes carry-over circuit for shutter motor.
2A	N.C.	36-3 31-3	Yellow-Brown Yellow-Red	(Closed when shutter closed). In series with ball lifter circuit after 1st ball is shot.
3A	N.O.	30 85-5	Yellow Black-White	(Closes during shutter cycle) resets selection feature, extra-ball, yellow, red, and green replay counter units.
3B	N.O.	20P 70P	Blue(Plastic) Orange(Plastic)	(Closes during shutter cycle) resets trip bank.
4A	N.O.	18-3 14-3	Red-Black Red-Green	(Closed when shutter open). In series with circuit to close shutter if game tilted when shutter is open.
4B	N.C.	10-13 40-8	Red Green	(Closed when shutter closed). In series with circuits to energize before 5th and after 5th selector lock relays.
4C	N.O.	18-3 45-8	Red-Black Green-White	(Closed when shutter open). In series with function of switch 4A above.
4D	N.C.	21-3 40-8	Blue-Red Green	(Closed when shutter closed). In series with function of switch 4C above. Also in series with collect scores, and operating feature circuits.
5A	N.C.	98-8 65-2	Gray-Black Brown-White	(Closed when shutter closed). In series with function of switch 1C above.
5B	N.O.	91-4 31-4	Gray-Red Yellow-Red	(Closed when shutter open). In series with lock-in circuit to lifter start relay.
5C	N.O.	36-5 61-8	Yellow-Brown Brown-Red	(Closed when shutter open). In series with circuit for magic-number, and selection feature steps.
5D	N.O.	30 18-11	Yellow Red-Black	(Closed when shutter open). In series with circuit to return four star replay counter to zero.
5E	S.P.D.T.	F-6 10-10 93-2	Brown-Yellow Red Gray-Yellow	Directs circuits to open shutter, and energize timer cams index, and mizer latch coils.
6XA	N.C.	70 91-8	Orange Gray-Red	NOTE: This switch is mounted on bracket under cam 6. (Open only during shutter cycle) completes circuit to energize red button relay.
6A	N.O.	71-8 30	Orange-Red Yellow	(Closes during shutter cycle) resets timer unit.
6B	N.O.	78-3 30	Orange-Black Yellow	(Closes during shutter cycle) resets magic-number feature unit, yellow, red, and green score units.

SHUTTER MOTOR

(MOTOR PART NO. E-119-99)



NOTE:

WHEN ORDERING GEARS FOR SHUTTER MOTOR,
REFER TO PART NUMBERS SHOWN ABOVE.

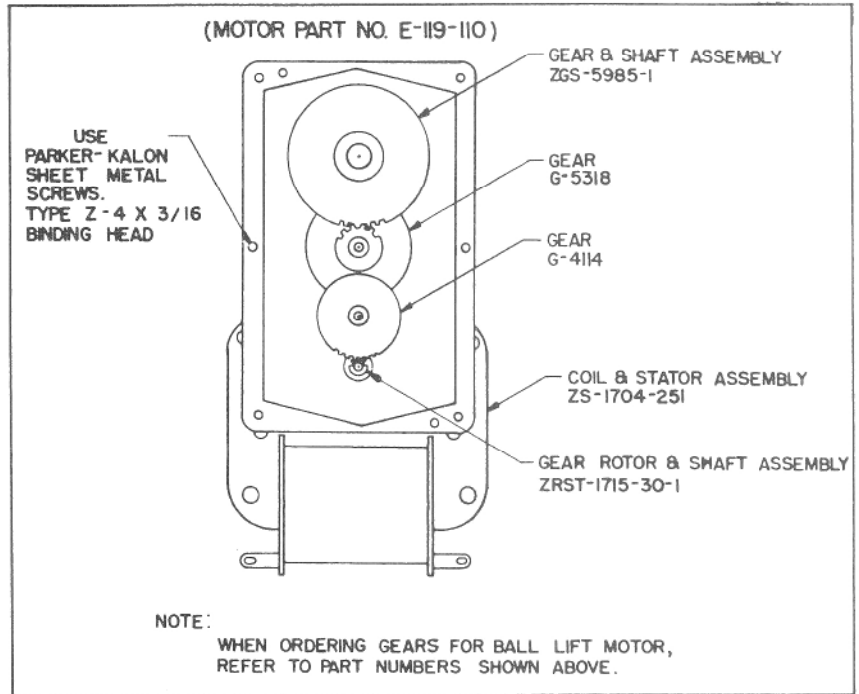
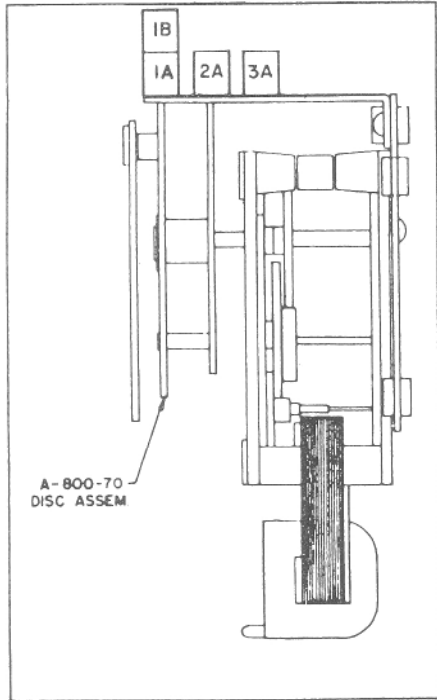
ANTI-CHEAT COIN SWITCH CIRCUIT

The coin switch gives a very short pulse, when operated by a coin. With this new circuit, the game will tilt if the pulse is not as short as from a coin, so that operating the coin switch with wire, strings, etc., usually results in a tilt.

The circuit is completed thru control unit cam switch #4D (on wiring diagram at G-5).

BALL LIFTER MOTOR PICTORIAL VIEW

NUMBERS CORRESPOND TO SWITCH CHART BELOW

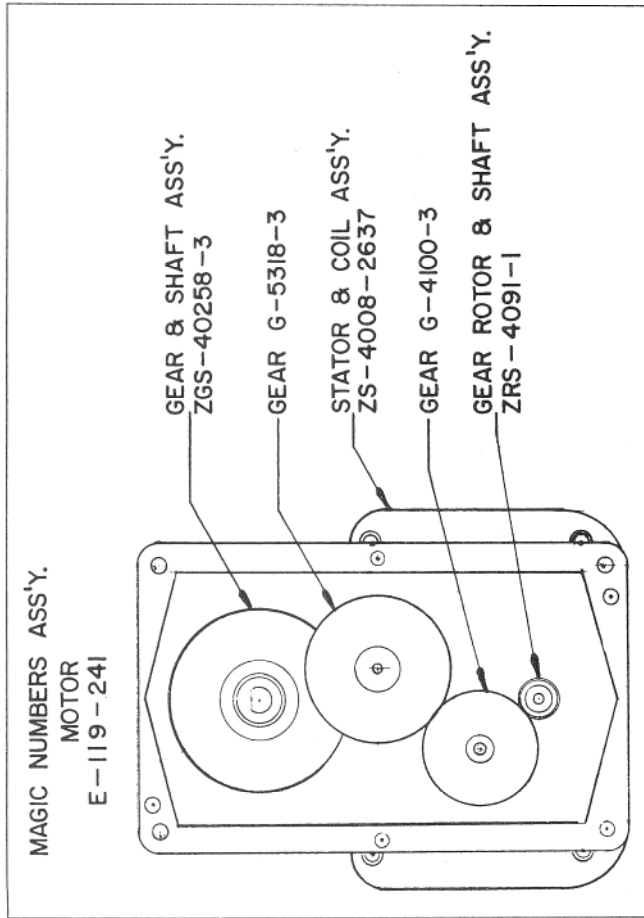


BALL LIFTER MOTOR SWITCH CHART

FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW ABOVE

CAM SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES	
1A	N.C.	H-11	15-6 85-6	Red-White Black-White	In series with circuit to energize before 5th, and after 5th selector lock relays.
1B	N.O.	I-13	91-1 30	Gray-Red Yellow	Completes ball lifter motor carry-over circuit.
2A	N.O.	E-7	27-2 43-2	Blue-Orange Green-Yellow	Pulses timer unit step-up coil for first 5 steps.
3A	N.O.	J-11	83-7 21-3	Black-Yellow Blue-Red	Completes circuit to energize before 4th selector lock relay.

MAGIC NUMBERS ASSEMBLY MOTOR (E-119-241)



MAGIC NUMBERS ASSEMBLY PARTS LIST

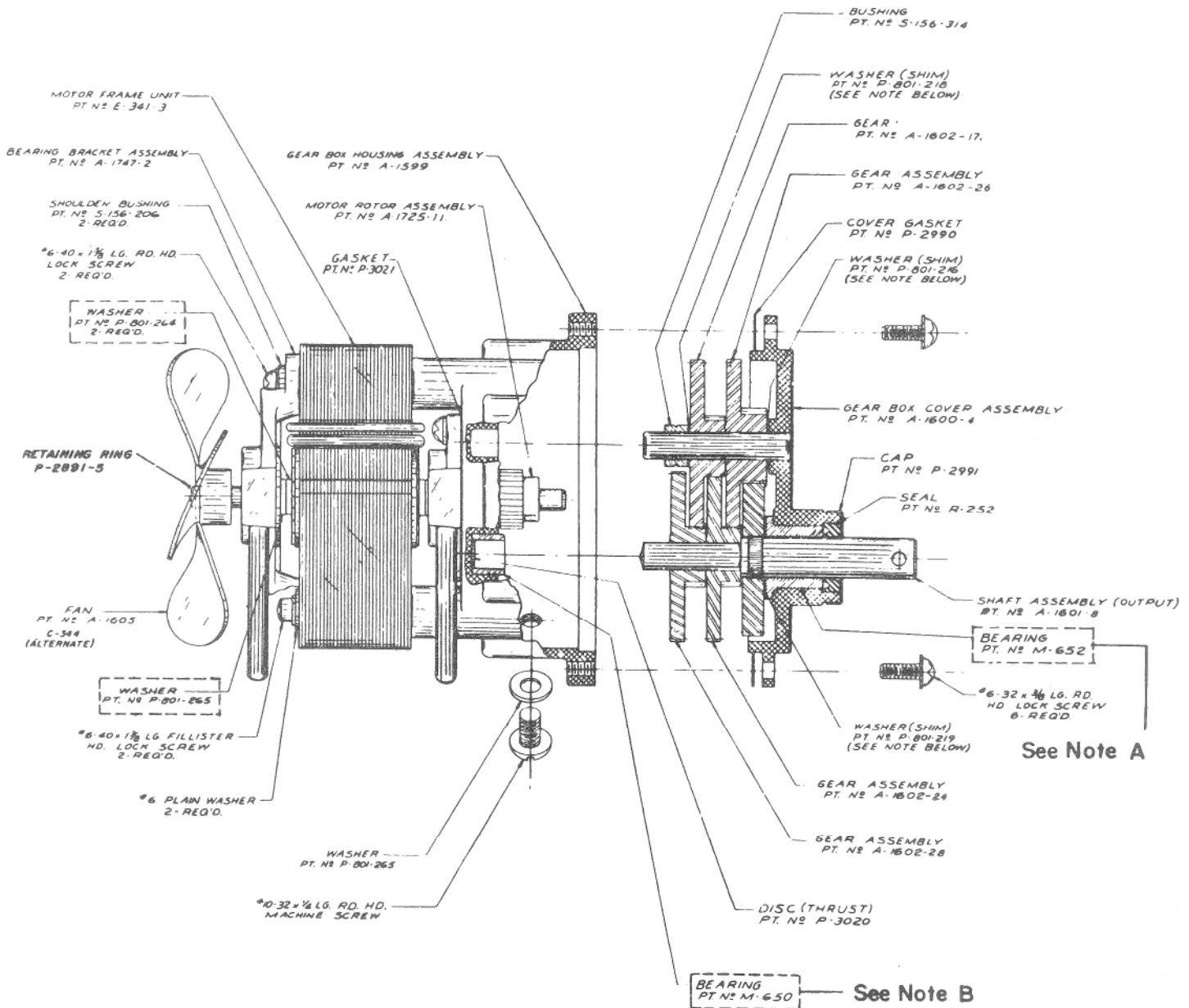
- Complete unit—AS-2071.
- Contact plates for A-B-C-D sections—W-947.
- Wiper assemblies for A-B-C-D Sections—AS-1046-305.
- Motor—E-119-241.
- Motor fan—C-344.
- Main roller chain—M-1058-1.
- Roller chain & link brackets for A-B-C-D sections—A-2503.
- Index magnet coils for A-B-C-D sections—C-2794-328.
- Key washers for A-B-C-D sections—P-163-36.
- Leather washers for A-B-C-D sections—P-163-35.
- Numbers assembly for "A" section—AS-2072-1.
- Numbers assembly for "B" section—AS-2072-2.
- Numbers assembly for "C" section—AS-2072-3.
- Numbers assembly for "D" section—AS-2072-4.

NOTE: When ordering individual plastic number discs for A-B-C-D sections, specify #1, #2, #3, etc.

MISCELLANEOUS RELAYS SWITCH CHART

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
LIFTER START RELAY COIL	A-43	38-8 70	Yellow-Black Orange	Energized by ball run way switch. This relay controls ball count circuit.
A	I-11	10-13 15-6	Red Red-White	In series with circuit to energize before 5th, and after 5th selector lock trip relays.
B	II-13	31-3 41-4	Yellow-Red Green-Red	In series with ball lifter motor circuit to raise balls.
C	C-43	36 38-8	Yellow-Brown Yellow-Black	Completes lock-in circuit for this relay.
MIXER #2 RELAY COIL	A-24	65-8 70	Brown-White Orange	Energized thru mixer #2 disc, when circuit complete thru other factors. This relay used to proportion scores, 4 star feature, 16 hole feature, super-line feature, and extra-balls.
A	N.O.	85-4 23	Black-White Blue-Yellow	In series with guaranteed score steps circuit, when playing blue button.
B	N.O.	56-6 15-7	White-Brown Red-White	In series with circuits for all blue button features and scores. Also extra-balls.
MIXER #4 RELAY COIL	A-35	91-3 70	Gray-Red Orange	Energized thru mixer #4 disc, when circuit complete thru other factors. This relay used to proportion magic-number feature, selection feature, and super-line feature.
A	N.C.	61-10 83-10	Brown-Red Black-Yellow	Opens circuit for super-line feature.
B	N.C.	36-5 51-5	Yellow-Brown White-Red	Opens circuit for magic-number feature, and selection feature.

MOTOR ASSEMBLY (Part No. E-119-212)



See Note A

See Note B

NOTE
 IN ORDER TO MAINTAIN PROPER CLEARANCES BETWEEN GEARS IT IS MOST IMPORTANT THAT WHEN REASSEMBLING GEAR TRAIN:
 1. SHIMS BE REPLACED IN THEIR RESPECTIVE LOCATIONS.
 2. SAME NUMBER OF SHIMS BE REPLACED IN EACH RESPECTIVE LOCATION.

NOTE A: Bearing M-652 is part of Gear Box Cover Assembly A-1600-4 and cannot be ordered separately.

NOTE B: Bearing M-650 is part of Gear Box Housing Assembly A-1599 and cannot be ordered separately.

CABINET

24

14-11	60-2
23-8	71-2
25-8	78-7
27-8	80-2
30	81
40-7	85-13
41-5	90-5
48-4	91-7
51-8	93-7
52-9	98-11
53-18	40 P
54-11	90 P

22

13	45-3
14-5	48-2
15-6	50-2
18-6	54-5
21-3	63-2
27-2	70
31-4	71-6
36-3	81-9
38-3	85-7
41-4	90-9
43-2	91-1

12

14-9	75-13
57-13	80-10
60-13	81-13
61-13	83-9
65-15	85-9
74-16	

PANEL

24

10-1	53-1
13-8	60-1
14-3	63-11
15-12	71-1
20	74-1
25-1	75-13
31-1	78-3
36-3	81
40-8	85-3
43-1	90-1
45-8	91-8
51-1	93-2

24

10-10	52-12
13-12	53
15-6	57-1
18-3	61-8
21-3	63-1
30	65-1
36-1	70
40-1	71-8
41-4	75-1
45-1	85-5
48-11	98-6
50-1	

20

14-4	48-1
18-11	50-12
21-7	52-1
23-7	56-1
25-11	60-9
27-1	61-1
31-4	65-2
36-5	91-4
38-1	20 P
41-8	70 P

FRONT DOOR

24

13	61-13
14-5	63-2
18-6	70
21-3	71-2
23-8	74-16
25-8	75-13
27-8	78-8
40-7	80-10
48-2	81-9
50-2	85-7
51-8	90-9
57-13	

TRANSFORMER

10

20	81
30	20 P
54-2	40 P
70	50 P
80-1	90 P

PLUG SHEET FOR ACAPULCO

MISCELLANEOUS PARTS

Back Cabinet Assembly:

Part No.	Name of Part
G-292-12	Back glass
M-281-31	Lock and keys (2) keyed alike
E-122-19	Transformer

Back Door Assembly:

M-281-24	Lock and keys (2) keyed alike
SW-100-106	Lock switch

Front Cabinet Assembly:

M-168-15	Ball
AS-187-17	Ball shooter assembly
AS-1835	Ball shooter housing
A-100-7	Ball shooter rod
SP-200-24	Ball shooter spring (long)
SP-243	Ball shooter spring (short)
R-108-3	Ball shooter tip
P-711-1	Cigarette holder
P-1900-47	Coin box
A-2304-2	Coin box cover
E-130-10	Counter—48 volt
P-4052	Legs
M-106-1	Leg bolt
M-163-4	Leg adjuster
A-1729-6	Push button
P-2768-15	Ring—blue
E-108-57	Toggle switch

Front Door Assembly:

A-1538-2	Armature plate (AS-277-50)
A-1729-6	Button—metal
E-101-45	Coil for coin lock out
AS-277-50	Coin switch assembly 5¢ or 10¢
CA-567-121	Front door only

Front Door Assembly (Continued):

Part No.	Name of Part
AS-2041-4	Front door assembly 5¢
A-254-33	Hinge and bracket
M-281-6	Lock and keys
E-108-14	Micro switch for coin switch assembly 5¢ or 10¢
P-2768-5	Ring—red
P-2768-6	Ring—yellow
P-2768-7	Ring for M-281-6 lock
P-2768-20	Ring—orange
M-280-15	Slug rejector 5¢
M-280-16	Slug rejector 10¢

Front Moulding Assembly:

A-2359	Coin slide 5¢ or 10¢
A-1272-23	Button assembly (A)
A-1272-24	Button assembly (B)
A-1272-25	Button assembly (C)
A-1272-26	Button assembly (D)
A-1272-27	Button assembly (E)
A-1272-29	Button assembly (R)
AS-1305-19	Front moulding assembly
CA-1058-4	Front moulding only
P-2210-36	Plate (AB) (CD) (ER) Buttons
P-2210-80	Plate 10¢ coin entry
P-2210-81	Plate 5¢ coin entry

Panel Assembly:

AS-1315	Ball gate and switch assembly
C-326-9	Light shield post
R-115-4	Rebound rubber
M-170	Rebound spring—double post
C-387-1	Roll over button—red
C-387-2	Roll over button—yellow
R-243	Rubber ring for yellow post
R-243-2	Rubber ring for red post

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