

Bally®

Carnival Queen

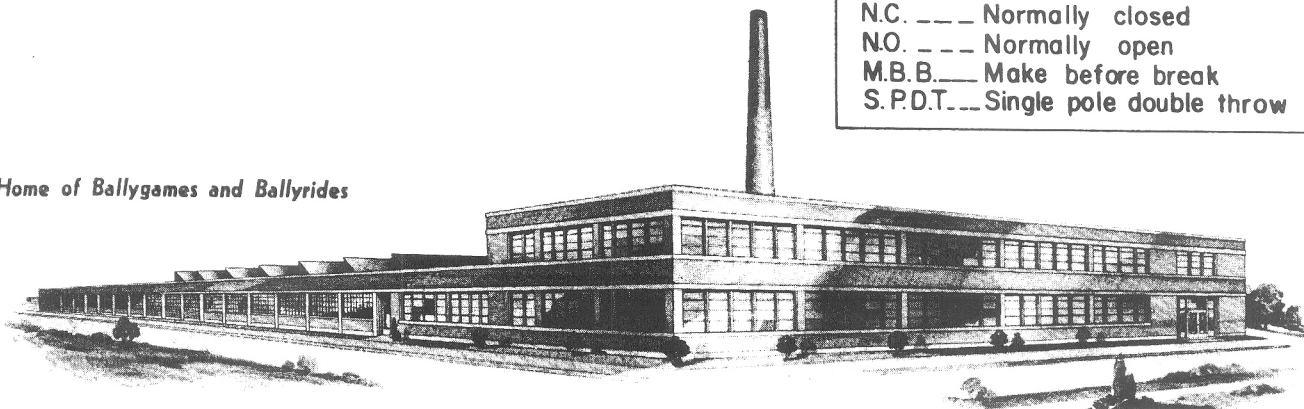
OPERATING INSTRUCTIONS AND PARTS CATALOG

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

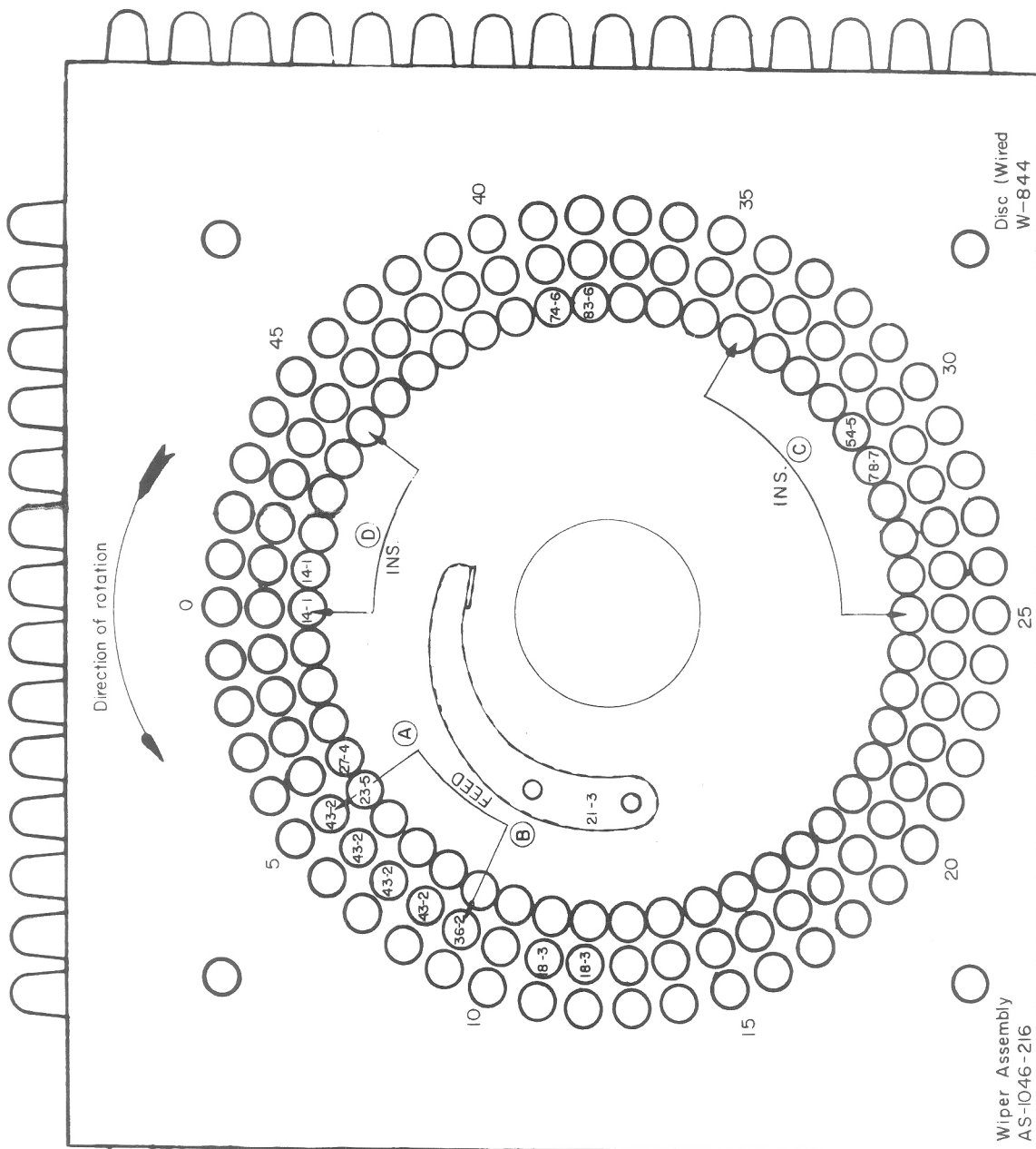
Home of Ballygames and Ballyrides





TIMER UNIT viewed from BUTTON or WIPER side

39 step unit. Wipers shown in zero or reset position

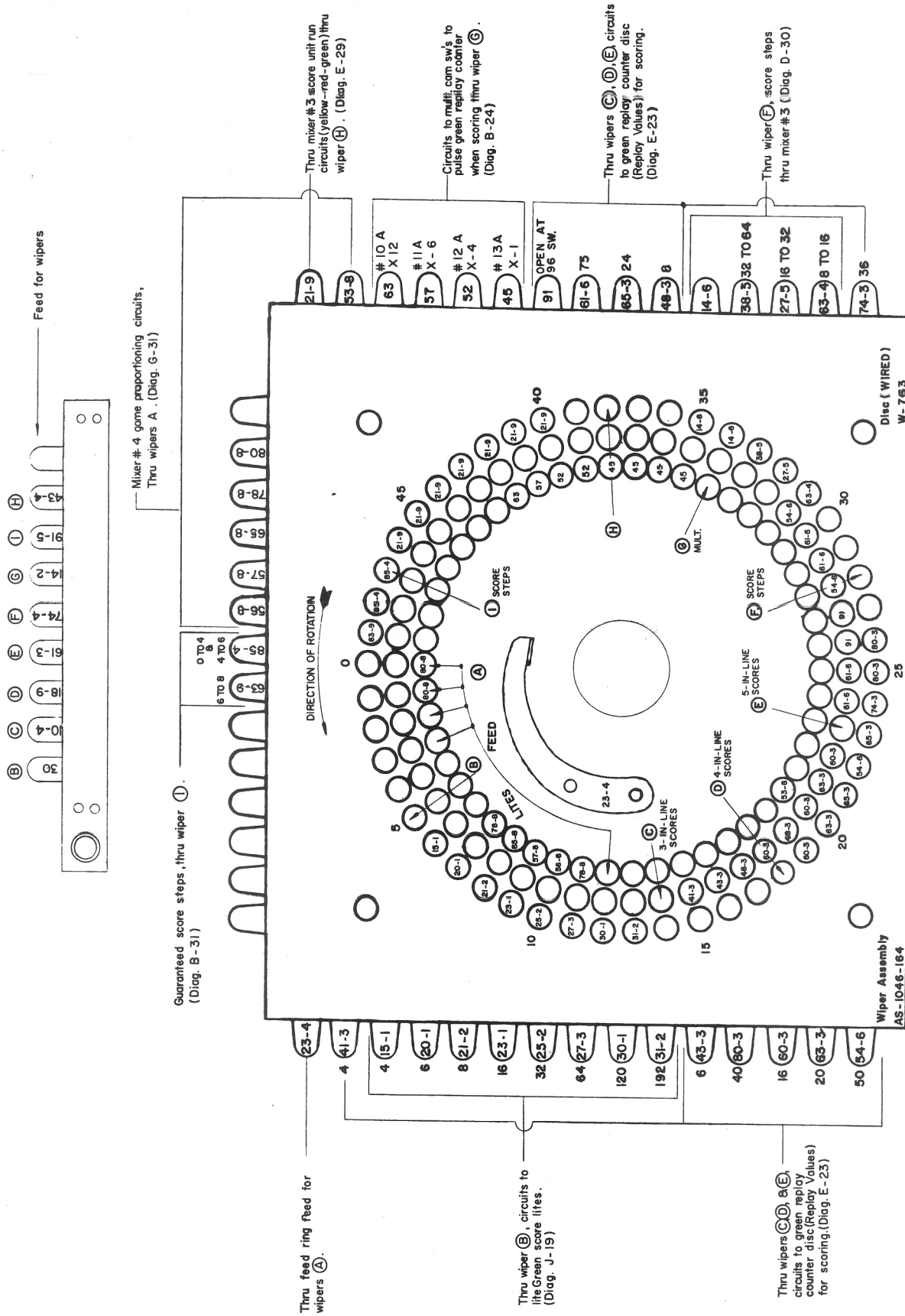


- Feed for wipers (D) — 14-1
- Thru wipers (D), circuit to flash 'select-now' lite at 4th step. (Diag. L-1) — 27-4
- Thru wiper (A), circuit to step this unit 1st 4 steps. (Diag. H-8) — 43-2
- Thru feed ring, feed for wipers (A) & (B) — 21-3
- Thru wiper (B), circuit to close shutter at 2nd step of unit. (Diag. H-8) — 18-3
- Thru wipers (C), circuit to energize before 4th selector lock trip relay, when 4th ball is shot. (Diag. B-9) — 83-6
- Thru wipers (C), circuit to energize before 5th selector lock trip relay, when 5th ball is shot. (Diag. B-9) — 78-7
- Thru wipers (C), circuit to flash 'select-now' lite at 5th step. (Diag. L-1) — 54-5
- Thru wiper (A), circuit to step unit from 4th to 5th step. (Diag. H-8) — 74-6
- Thru wiper (A), circuit to step unit from 4th to 5th step. (Diag. H-8) — 23-5
- Thru wiper (A), circuit to step unit from 4th to 5th step. (Diag. H-8) — 36-2

Complete unit --- AS-110-28
 Reset coil --- 28-R-15
 Step-up coil --- 25-GG-7
 Step-up plunger --- S-496-10C
 Step-up arm --- A-1765-4
 Ratchet & shaft --- C-1050-39-21

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

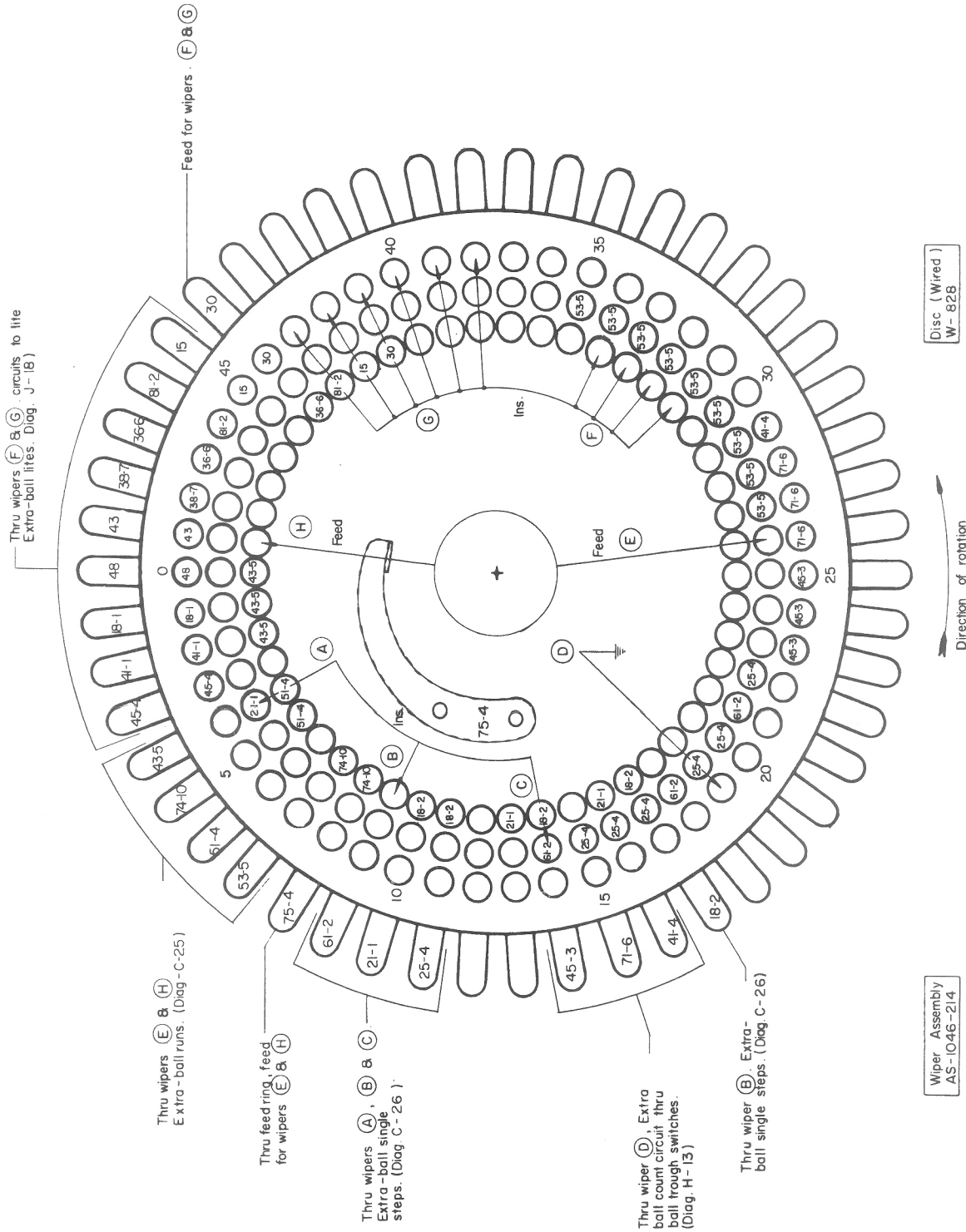
8 step unit. Wipers shown in zero or reset position



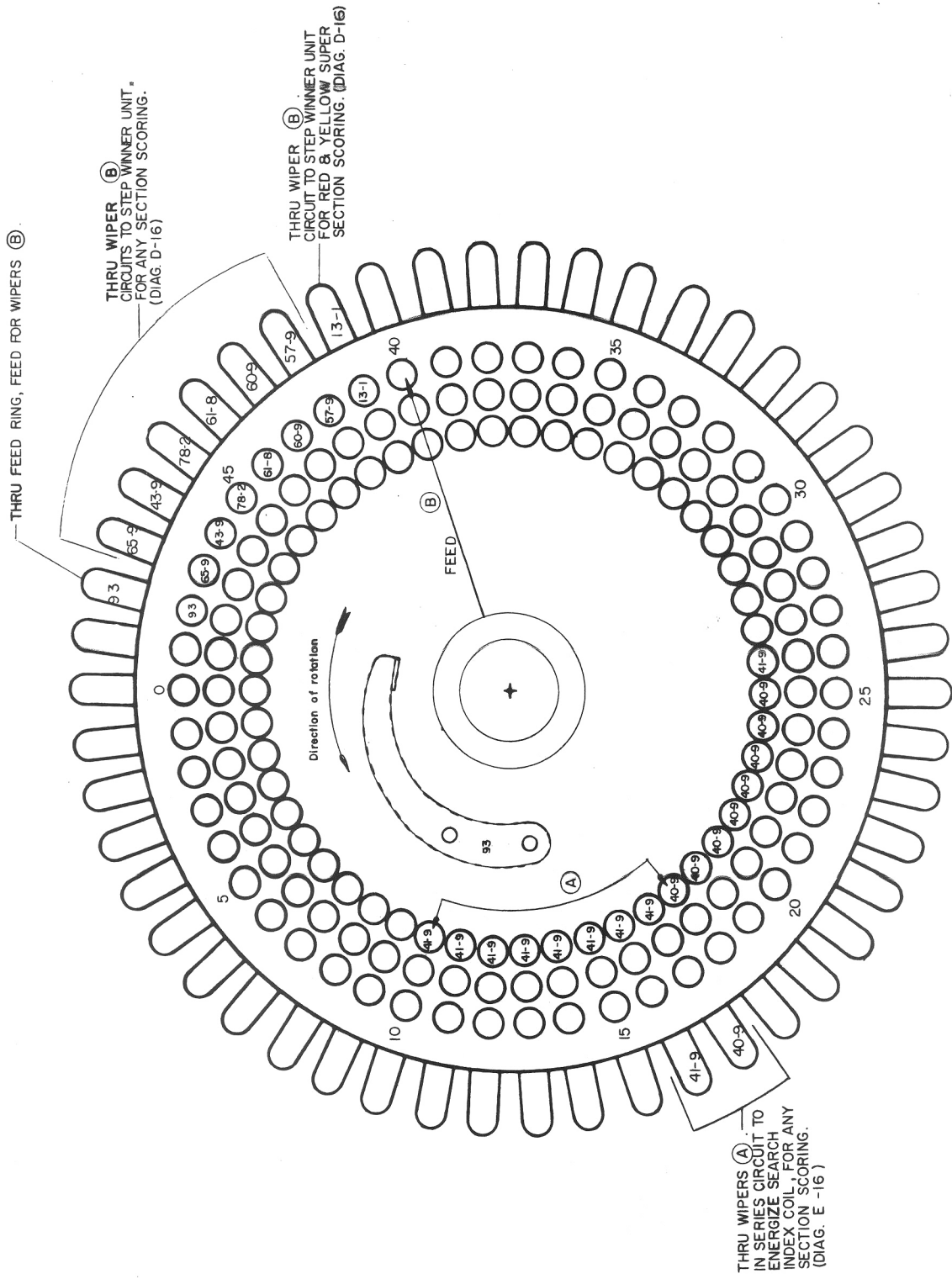
- | | |
|-----------------|-------------|
| Complete Unit | AS-1022-32 |
| Reset Coil | 28-R-15 |
| Step-Up Coil | 25-GG-7 |
| Step-Up Plunger | S-496-100 |
| Step-Up Arm | A-1763-8 |
| Ratchet & Shaft | C-1050-8-39 |

EXTRA BALL UNIT viewed from BUTTON or WIPER side

10 step unit. Wipers shown in zero or reset position



44 SEQUENCE UNIT viewed from **BUTTON** or **WIPER** side **9 step unit. Wipers shown in zero or reset position**



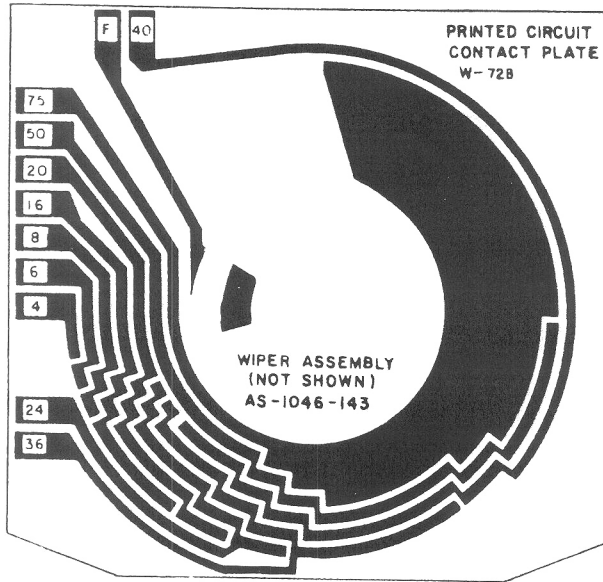
Complete unit... AS-827-71
 Reset coil... 28-R-15
 Step-up coil... 25-GG-7
 Step-up arm... A-1765-4
 Step-up plunger... S-496-100
 Ratchet & shaft... C-1050-8-40

Wiper Assembly
 AS-1046-224

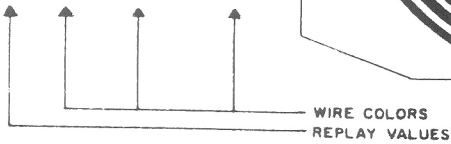
Disc (Wired)
 W-847

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

LUG	YELLOW REPLAY COUNTER	RED REPLAY COUNTER	GREEN REPLAY COUNTER
50	57-2	40-3	54-6
75	50-6	52-6	61-6
F	23	71	91
36	51-2	23-3	74-3
24	41-2	20-3	65-3
20	40-2	10-3	63-3
16	23-2	85-2	60-3
8	93-1	83-2	48-3
6	81-1	74-2	43-3
4	78-1	60-2	41-3
40	52-2	25-3	80-3



- Complete Unit - AS-797-36
- Reset Coil - 28-R-15
- Step-up Coil - 25-GG-7
- Step-up Plunger - S-496-116
- Step-up Arm - A-1765-49
- Ratchet & Shaft - C-100



CAM SWITCHES THAT PULSE YELLOW, GREEN & RED REPLAY COUNTER STEP-UP COILS

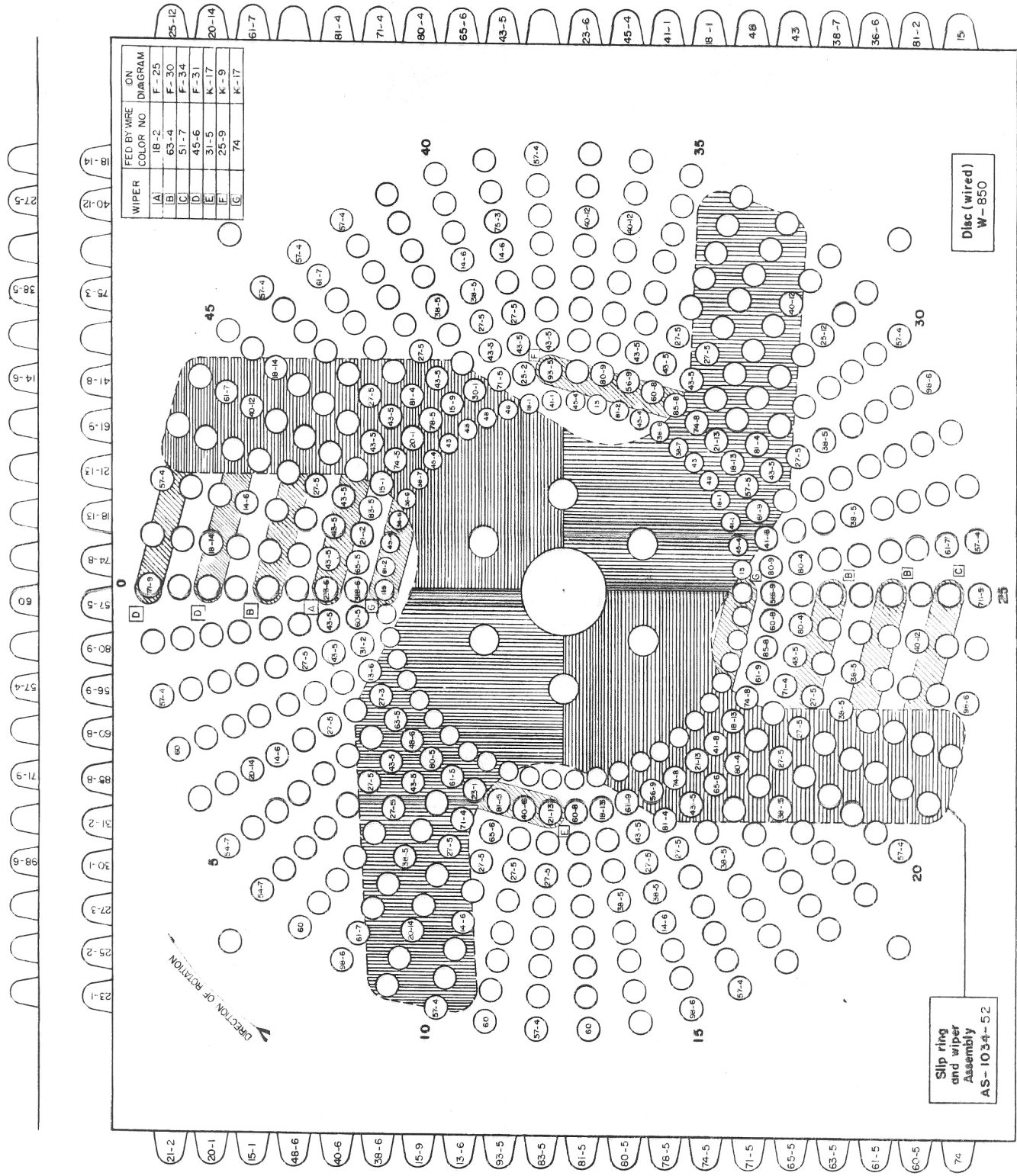
	sw.13A	sw.13A	sw.13A	sw.13A	sw.12A	sw.12A	sw.11A	sw.10A
5 IN LINE	75 	75 	96 	96 	200 	300 	450 	600
4 IN LINE	16 	20 	24 	50 	96 	144 	240 	480
3 IN LINE	4 	6 	8 	16 	32 	64 	120 	192

LARGE NUMBERS ARE REPLAY SCORES SHOWN ON BACK GLASS.
 NUMBERS IN SHADED CIRCLES INDICATE WHICH PORTION OF
 REPLAY CIRCUIT STRIP
 IS EFFECTIVE FOR A PARTICULAR REPLAY SCORE.

EXAMPLE: ON A 3-IN-LINE SCORE OF REPLAYS
 THE CIRCUIT IS EFFECTIVE THRU THE REPLAY CIRCUIT STRIP

NOTE: 96 VALUE REPLAY SCORES ARE
 EFFECTIVE THRU THE OPEN AT 96 SWITCH.

48 SPOTTING DISC viewed from BUTTON or WIPER side

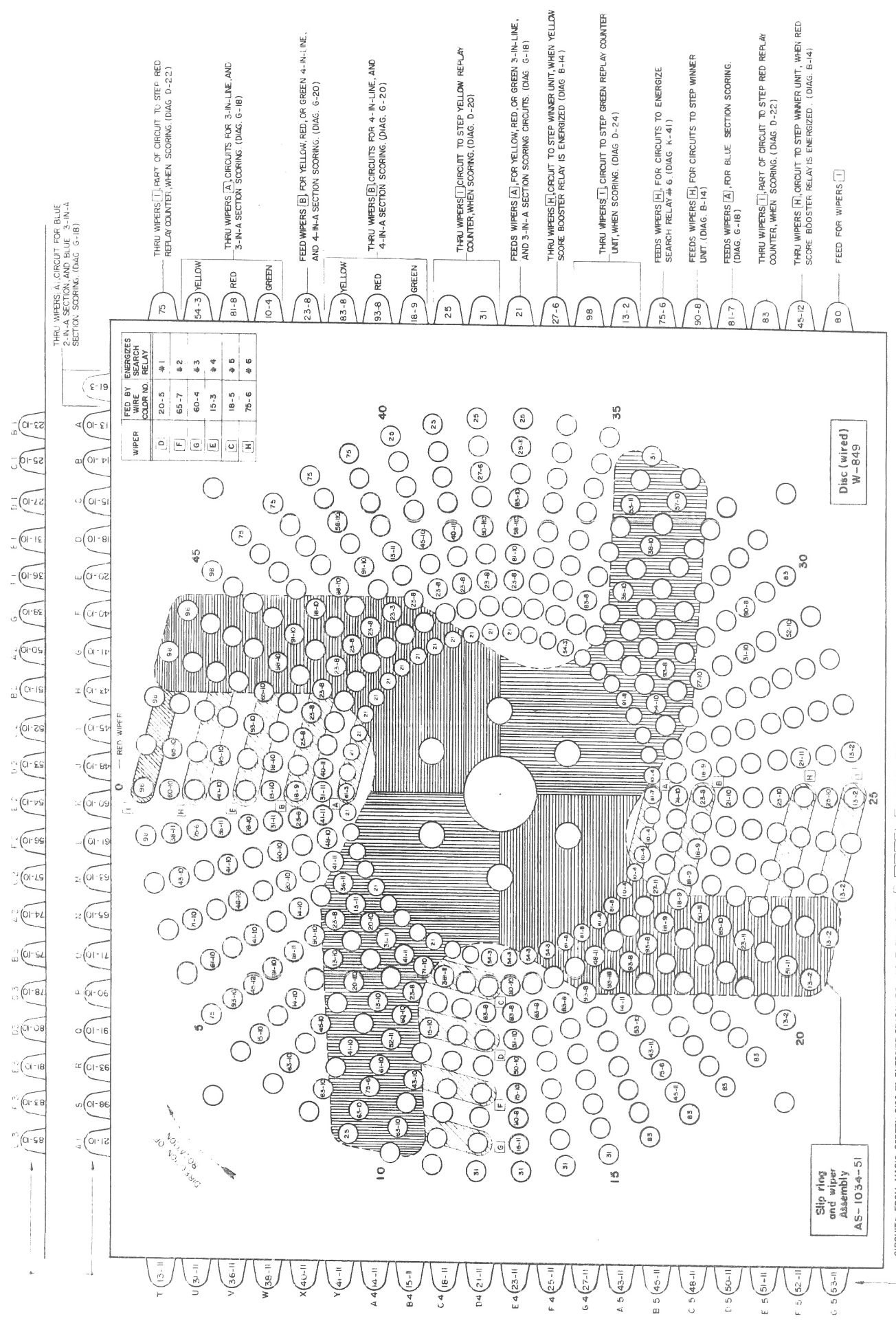


Slip ring and wiper Assembly AS-1034-52

Disc (wired) W-850

DIRECTION OF ROTATION

SEARCH DISC viewed from BUTTON or WIPER side



WIPER	FED BY WIRE COLOR NO.	ENERGIZES SEARCH RELAY
D	20-5	1
F	65-7	2
G	60-4	3
E	15-3	4
C	18-5	5
H	75-6	6

- 75 THRU WIPERS [I] PART OF CIRCUIT TO STEP RED REPLAY COUNTER, WHEN SCORING. (DIAG. D-22)
- 54-3 YELLOW
- 81-8 RED
- 10-4 GREEN
- 23-8
- 83-8 YELLOW
- 93-8 RED
- 18-9 GREEN
- 25
- 31
- 21 FEEDS WIPERS [A], FOR YELLOW, RED, OR GREEN 3-IN-LINE, AND 3-IN-A SECTION SCORING CIRCUITS. (DIAG. G-18)
- 27-6 THRU WIPERS [H] CIRCUIT TO STEP WINNER UNIT, WHEN YELLOW SCORE BOOSTER RELAY IS ENERGIZED. (DIAG. B-14)
- 98 THRU WIPERS [I] CIRCUIT TO STEP GREEN REPLAY COUNTER UNIT, WHEN SCORING. (DIAG. D-24)
- 13-2
- 75-6 FEEDS WIPERS [H] FOR CIRCUITS TO ENERGIZE SEARCH RELAY # 6. (DIAG. K-41)
- 90-8 FEEDS WIPERS [H] FOR CIRCUITS TO STEP WINNER UNIT. (DIAG. B-14)
- 81-7 FEEDS WIPERS [A], FOR BLUE SECTION SCORING. (DIAG. G-18)
- 83 THRU WIPERS [I] PART OF CIRCUIT TO STEP RED REPLAY COUNTER, WHEN SCORING. (DIAG. D-22)
- 45-12 THRU WIPERS [H] CIRCUIT TO STEP WINNER UNIT, WHEN RED SCORE BOOSTER RELAY IS ENERGIZED. (DIAG. B-14)
- 60 FEED FOR WIPERS [I]

Slip ring and wiper Assembly AS-1034-51

Disc (wired) W-849

CIRCUITS FROM MAGIC SCREEN DISC TO ENERGIZE SEARCH RELAYS, THRU WIPERS [D] [F] [E] [C] [G] [H] (DIAG. L-39)

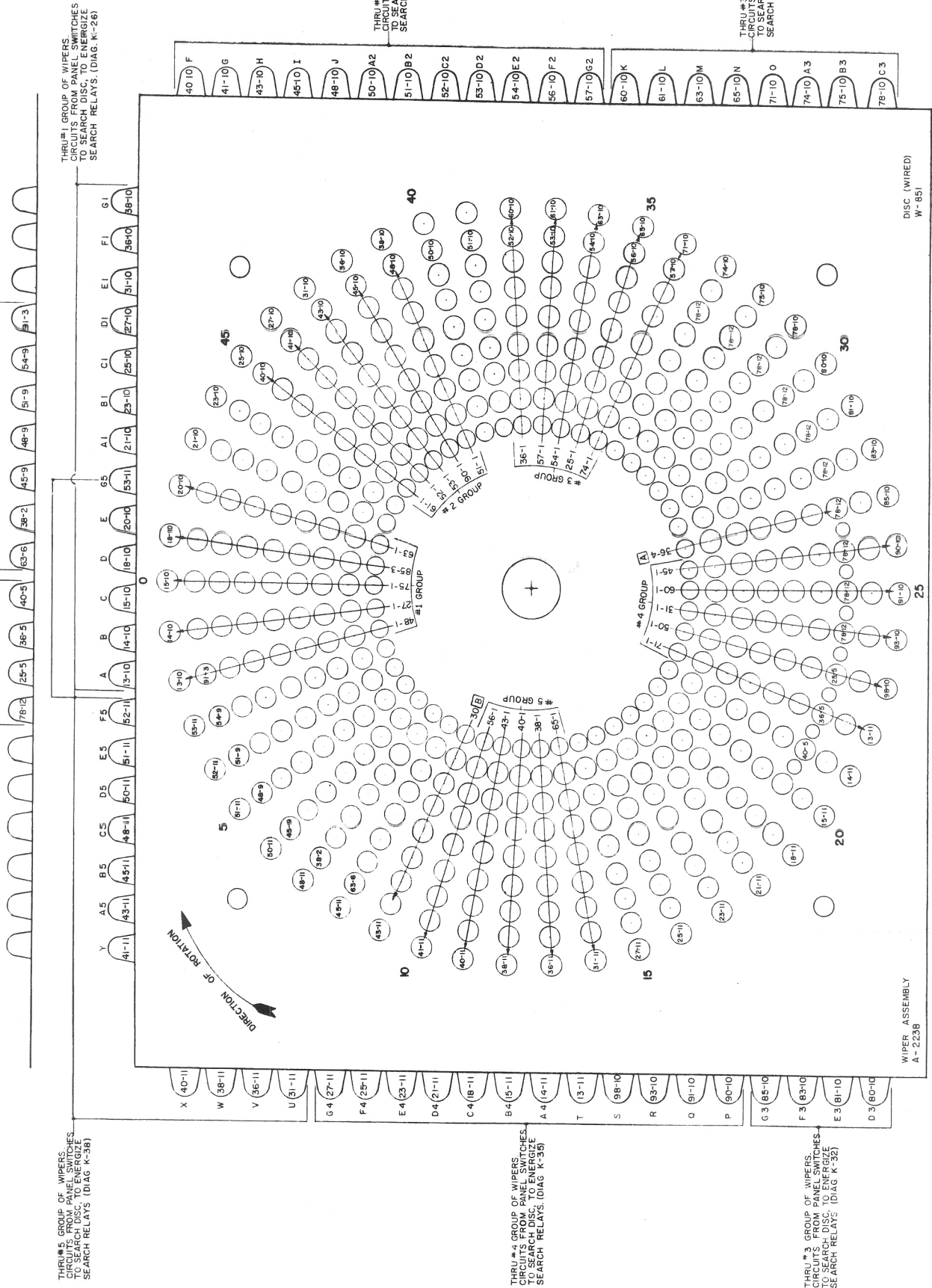
MAGIC SCREEN UNIT

viewed from BUTTON or WIPER side

7 step unit. Wipers shown in zero or reset position

THRU WIPER (A) CIRCUITS TO ENERGIZE MAGIC SCREEN INDEX COIL FOR MOVING MAGIC SCREEN LEFT. (DIAG. D-37)

THRU WIPER (B) CIRCUITS TO LINE MAGIC SCREEN POSITION INDICATOR LINES. (DIAG. K-20)



THRU #5 GROUP OF WIPERS. CIRCUITS FROM PANEL SWITCHES TO SEARCH DISC. TO ENERGIZE SEARCH RELAYS. (DIAG. K-38)

THRU #4 GROUP OF WIPERS. CIRCUITS FROM PANEL SWITCHES TO SEARCH DISC. TO ENERGIZE SEARCH RELAYS. (DIAG. K-35)

THRU #3 GROUP OF WIPERS. CIRCUITS FROM PANEL SWITCHES TO SEARCH DISC. TO ENERGIZE SEARCH RELAYS. (DIAG. K-32)

THRU #1 GROUP OF WIPERS. CIRCUITS FROM PANEL SWITCHES TO SEARCH DISC. TO ENERGIZE SEARCH RELAYS. (DIAG. K-26)

THRU #2 GROUP OF WIPERS. CIRCUITS FROM PANEL SWITCHES TO SEARCH DISC. TO ENERGIZE SEARCH RELAYS. (DIAG. K-29)

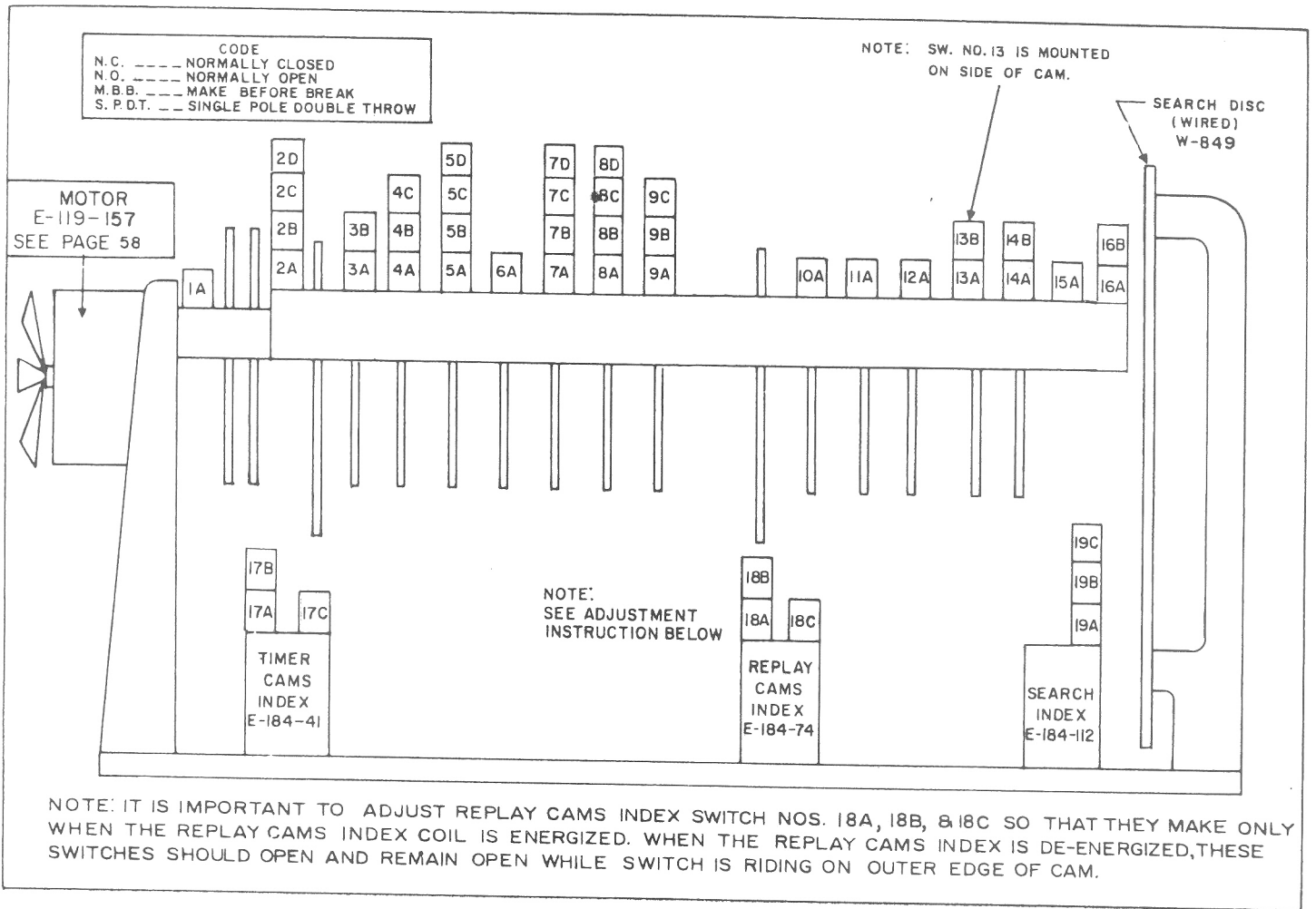
THRU #3 GROUP OF WIPERS. CIRCUITS FROM PANEL SWITCHES TO SEARCH DISC. TO ENERGIZE SEARCH RELAYS. (DIAG. K-32)

WIPER ASSEMBLY
A - 2238

DISC (WIRED)
W - 851

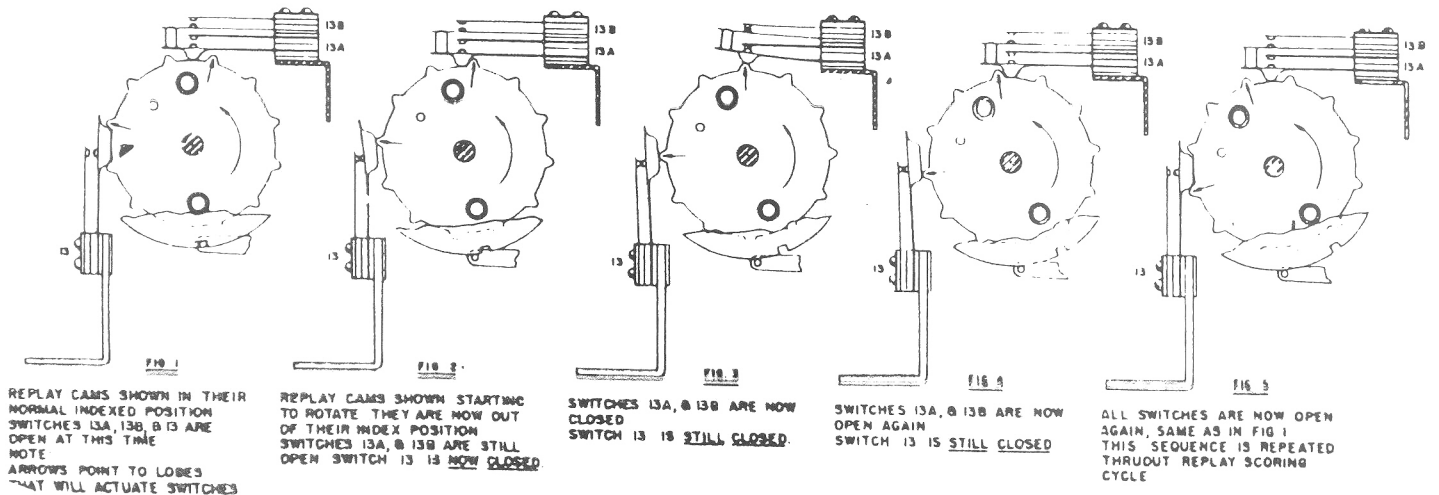
CONTROL UNIT PICTORIAL VIEW

NUMBERS CORRESPOND TO SWITCH CHART ON PAGE 52



CORRECT ADJUSTMENT: CONTROL UNIT CAM 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.



CONTROL UNIT CAM SWITCH CHART

FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW ON PAGE 51

CAM SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
1A	N.O.	36-9 65-2	Yellow-Brown Brown-White	Completes circuit to step timer unit, after shooting 5th ball.
2A	N.O.	90-5 30	Gray Yellow	Completes a circuit to energize reflex play magnet, and replay register reset coil. Also pulses total plays meter.
2B	N.O.	93-4 30	Gray-Yellow Yellow	Completes circuit to energize coin kicker coil.
2C	N.C.	31-7 57-6	Yellow-Red White-Orange	Breaks lock-in circuit to red button relay.
2D	N.O.	10-2 61-7	Red Brown-Red	Completes circuit to energize red or yellow score booster relay.
3A	N.C.	48-2 63-3	Green-Black Black-Yellow	Breaks lock-in circuit to start relay, and acts as safety switch during spin.
3B	S.P.D.T.	93-7 96-4 91-7	Gray-Yellow Gray-Black Gray-Red	Directs circuit from replay meter, to total plays meter.
4A	N.O.	98-1 30	Gray-Black Yellow	Completes circuit to energize spotting cams index coil.
4B	N.O.	56-5 30	White-Brown Yellow	Completes circuit to energize score extra step index coil.
4C	N.O.	14-9 80-2	Red-Green Black	Completes circuit to pulse coin meter.
5A	N.O.	65-2 83-1	Brown-White Black-Yellow	Completes circuit to energize timer unit reset coil, when playing extra balls.
5B	N.O.	21-1 38-4	Blue-Red Yellow-Black	Completes circuit to energize extra-ball unit step-up coil, for single steps.
5C	N.O.	78-4 91-6	Orange-Black Gray-Red	Completes circuit to energize anti-cheat relay.
5D	N.O.	10-7 85-4	Red Black-White	Completes circuit to energize magic-screen feature unit step-up coil, for single steps.
6A	N.L.	51-5 75-5	White-Red Orange-White	Opens game advantage circuits, during cycle.
7A	N.O.	10-1 75-8	Red Orange-White	Completes circuit to energize yellow score unit step-up coil, for single steps.
7B	N.O.	63-4 71-11	Brown-Yellow Orange-Red	Completes circuit to yellow, red and green score unit step-up coils, for single steps.
7C	N.O.	23-9 83-4	Black-Yellow Black-Yellow	Completes circuit to energize red score unit step-up coil, for single steps.
7D	N.O.	90-4 91-5	Gray Gray-Red	Completes circuit to energize green score unit step-up coil, for single steps.

CONTROL UNIT CAM SWITCH CHART

FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW ON PAGE 51

CAM SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
8A	N.O.	14-8 56-6	Red-Green White-Brown	Completes circuit to energize magic-screen feature unit step-up coil, for single sweeps.
8B	N.O.	25-4 38-4	Blue-White Yellow-Black	Completes circuit to energize extra-ball unit step-up coil, for single steps.
8C	N.O.	18-7 61-7	Red-Black Brown-Red	Completes circuit to energize red or yellow score booster relay.
8D	N.O.	93-4 30	Gray-Yellow Yellow	(Safety circuit) to energize coin kicker coil.
9A	All.	43-5 74-7	Green-Yellow Orange-Green	(Proportioning circuit) for extra-ball unit steps.
9B	All.	20-7 10-2 65-12	Blue Red Black-White	(Proportioning circuit) for red or yellow score booster relay.
9C	All.	15-7 54-8	Red-White White-Green	(Proportioning circuit) for extra-ball unit steps.
Mult. X 12 10A	N.O.	63 70	Brown-Yellow Orange	Completes circuit to step replay counters, when score units are at 8th step.
Mult. X 6 11A	N.O.	57 70	White-Orange Orange	Completes circuit to step replay counters, when score units are at 7th step.
Mult. X 4 12A	N.O.	52 70	White-Blue Orange	Completes circuit to step replay counter units, when score units are at 5th or 6th step.
Mult. X 1 13A	N.O.	45 70	Green-White Orange	Completes circuit to step replay counter units, when score units are at 1st, 2nd, 3rd or 4th step.
13B	N.O.	48-4 80	Green-Black Black	Completes circuit to step replay register step-up coil, reflex replay magnet, and replay meter.
13	N.O. Backside	21-3 27	Blue-Red Blue-Orange	Completes replay lock-in circuit. (NOTE: See control unit pictorial view.)
14A	N.C.	14 18	Red-Green Red-Black	Prevents the start of another replay scoring, when control unit cams are indexed.
14B	N.C.	27-2 90-2	Blue-Orange Gray	Breaks timer unit step-up circuit, during replay scoring.
15A	N.O.	21-3 31-6	Blue-Red Yellow-Red	Completes circuit to reset sequence unit, and wimer unit.
Change-over 16 S.P.D.T.		56 18 54	White-Brown Red-Black White-Green	Directs in-line, or section replay scoring circuit.
Change-over 168 S.P.D.T.		80 51-8 41-9	Black White-Red Green-Red	Directs circuit to energize search index coil for in-line, or section replay scoring.
TIMER CAMS INDEX COIL		93-2 70	Gray-Yellow Orange	Energized when playing coins or replays.
17A	N.O.	20-P 60-P	Blue (Plastic) Brown (Plastic)	Completes circuit to run control unit, and mixer and spotting unit motors.
17B	N.C.	14-9 71-2	Red-Green Orange-Red	Breaks circuit to coin lock-out magnet, during cycle.
17C	N.C.	F-12 13 30	Red-Yellow Yellow	Lock-in safety circuit for red button relay.

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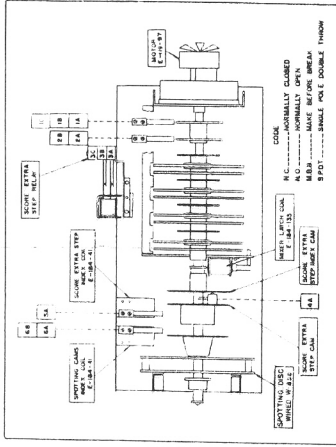
CONTROL UNIT CAM SWITCH CHART

FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW ON PAGE 51

CAM SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
REPLAY CAMS INDEX COIL	A-18	40-4 70	Green Orange	Energized by search index switch #18B, and releases replay cams for scoring.
18A N.O.	H-14	14 16	Red-Green Red-Black	In series with in-line, or section replay scoring circuit. NOTE: See control unit pictorial view for correct adjustment.
18B N.O.	G-17	27 80	Blue-Orange Black	In series with replay lock-in circuit, during in-line or section scoring. NOTE: See control unit pictorial view for correct adjustment.
18C N.O.	F-17	36-14 80	Yellow-Brown Black	In series with replay lock-in circuit, during section scoring. NOTE: See control unit pictorial view for correct adjustment.
18D N.C.	B-17	15-2 91-8	Red-White Gray-Yellow	Breaks direct 50 volt circuit to search index coil, coil then held in thru resistor.
SEARCH INDEX COIL	A-17	15-2 70	Red-White Orange	Energized thru change-over cam switch #18B, for in-line or section replay scoring.
19A N.O.	H-17	54 91-13	White-Green Gray-Red	Completes circuit for section replay scoring.
19B N.O.	C-16	40-4 80	Green Black	Completes circuit to energize replay cams index coil.
19C N.C.	I-4	15-5 83-3	Red-White Black-Yellow	Breaks start circuit, and acts as safety switch.
SEARCH INDEX LOCK MAGNET COIL	A-37	52-9 70	White-Blue Orange	(Not shown on pictorial view) energized by front rail collect scores button switch, and releases search wipers.
20A N.C.	G-38	14-4 20-2	Red-Green Blue	(Not shown on pictorial view) breaks circuit for moving magic-screen (left or right).

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 DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
16 Pulse 1A N.O.	G-31	14-8 45-6	Red-Green Green-White	Pulses magic-screen feature unit step-up coil for multiple steps. Also energizes blue score booster, roll-over, and select before 5th trip relays.
16 Pulse 1B N.O.	D-3	53-7 75-2	White-Yellow Orange-White	Pulses replay register unit reset coil.
16 Pulse 1C N.O.	J-1	80-9 90	Black Gray	Flashes "select-now" lite, thru timer unit disc.
16 Pulse 2A N.O.	F-14	52-8 93	White-Blue Gray-Yellow	Pulses sequence unit step-up coil, when searching for section winner.
16 Pulse 2B N.O.	B-25	38-4 78	Yellow-Black Orange-Black	Pulses extra-ball unit step-up coil, for multiple steps.
SCORE EXTRA STEP RELAY COIL	A-8	43-6 70	Green-Yellow Orange	Energized by red, yellow, and green score unit step-up arm switches.
3A N.O.	C-9	43-6 81-3	Green-Yellow Black-Red	Lock-in circuit for this relay.
3B N.O.	C-28	50-4 51-6	White White-Red	Completes circuit for yellow, red or green score unit multiple steps.
3C N.C.	I-4	15-5 30	Red-White Yellow	(Safety switch) opens start circuit, during score unit multiple steps.
4A N.O.	D-28	43-4 50-4	Green-Yellow White	Pulses red, yellow, and green score units for multiple steps.
SCORE EXTRA STEP INDEX COIL	A-40	56-5 70	White-Brown Orange	Energized by control unit cam switch #4B.
5A N.O.	C-10	13-5 81-3	Red-Yellow Black-Red	In series with lock-in circuit for score extra step relay.
SPOTTING CAMS INDEX COIL	A-45	98-1 70	Gray-Black Orange	Energized by control unit cam switch #4A.
6A N.O.	J-17	13-4 30	Red-Yellow Yellow	Flashes game advantage lites. Also flashes extra-ball lites, during extra-ball play.
6B N.O.	J-9	81-6 30	Black-Red Yellow	Flashes game advantage lites.

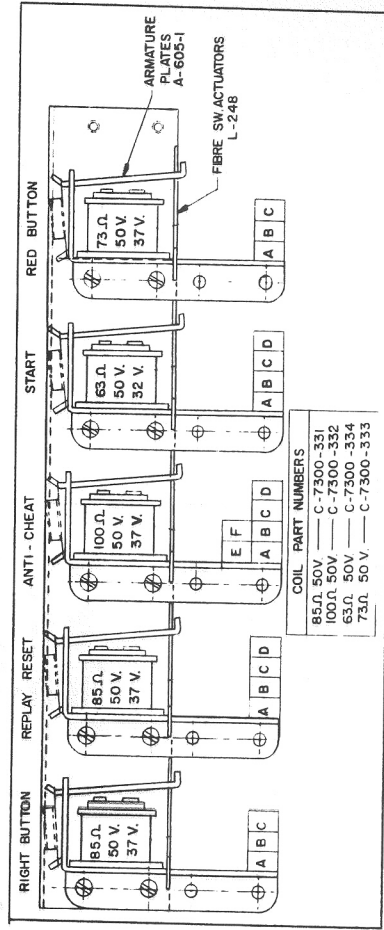
TRIP RELAY BANK CHART

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
EXTRA BALL #1 TRIP	A-13			Trips with extra ball #2 trip relay.
L1 N.O.	G-9	71-8 83-1	Orange-Red Black-Yellow	Completes circuit to reset timer unit, after playing extra-balls.
L2 N.C.	IE-27	85-4 91-6	Black-White Gray-Red	Completes circuit to energize anti-cheat relay, (when this relay is latched).
L3 S.P.D.T.	IE-26	85-4 30 31-2	Black-White Yellow Brown-Red	Breaks guaranteed score steps circuit, and completes circuit to extra-ball unit for 1st step.
L4 S.P.D.T.	IE-28	60-6 27-7 18-2	Brown Blue-Orange Red-Black	Breaks circuit for score steps, and completes circuit for extra-ball steps.
R1 S.P.D.T.	II-28	75-5 15-7 45-2	Orange-White Red-White Green-White	Breaks circuit for score steps, and other game advantages, and completes circuit for extra-ball steps.
R2 N.C.	GE-29	45-2 83-9	Green-White Black-Yellow	Breaks circuit for game advantages.
EXTRA BALL #2 TRIP COIL	A-13	J 70	Jumper Orange	Energized by yellow button switch, when playing for extra-balls.
L1 N.O.	ID-13	38-3 91-1	Yellow-Black Gray-Red	Completes circuit to run ball lift motor, thru extra-ball unit disc.
L2 N.C.	IE-13	10-6 J	Red Jumper	Breaks circuit to coil.
L3 S.P.D.T.	ID-6	14-3 61 98-2	Red-Green Brown-Red Gray-Black	Breaks circuit to shutter motor, and completes circuit to energize mixer latch, and timer cams index coils.
L4 S.P.D.T.	II-17	31-5 13-4 74	Yellow-Red Red-Yellow Orange-Green	Breaks circuit to flash score lites, and completes circuit to flash extra-ball lites.
R1 N.O.	II-22	21-4 30	Blue-Red Yellow	Completes circuit to extra-ball lites (on back glass).
R2 N.O.	GE-28	27-7 54-8	Blue-Orange White-Green	Proportioning circuit, for extra-ball steps.
R3 N.C.	KE-9	25-9 81-6	Blue-White Black-Red	Breaks circuit to flash game advantage lites.
SELECT BEFORE 5th TRIP COIL	A-36	J 70	Jumper Orange	Energized thru spotting disc, when circuit complete thru other factors. Also by panel rollovers, when rollover trip relay is energized.
L1 N.O.	II-10	50-8 30	White Yellow	Completes circuit to press buttons before shooting 5th ball indicator lites (to show feature is in play).
L2 N.C.	FE-29	60-6 71-11	Brown Orange-Red	Completes circuit to press buttons before shooting 5th ball indicator lites (to show feature is in play).
L3 S.P.D.T.	IE-1	27-4 53-2 23-9	Blue-Orange White-Yellow Blue-Yellow	Thru timer unit disc, directs circuit to flash "press buttons now" lites before shooting 4th ball or before shooting 5th ball.
L4 S.P.D.T.	II-5	57-5 80-9 74-8	White-Orange Black Orange-Green	Directs circuit to lites, press buttons before 4th, or press buttons before 5th feature lites. (On back glass)
R1 N.O.	IE-37	93-3 98-3	Gray-Yellow Gray-Black	Completes circuit to keep magic-screen buttons alive after 4th ball is shot.
R2 N.C.	CE-36	75-3 J	Orange-White Jumper	Breaks circuit to coil.
BEFORE 4th SELECTOR LOCK TRIP COIL	A-9	J 70	Jumper Orange	Energized thru timer unit disc, when 4th ball is shot.
1 S.P.D.T.	GE-38	98-3 93-3 53	Gray-Black Gray-Yellow White-Yellow	Breaks circuit to magic-screen buttons, and completes circuit to collect scores button.
2 N.C.	IE-9	83-6 J	Black-Yellow Jumper	Breaks circuit to coil.
3 N.O.	GE-8	36-2 43-2	Yellow-Brown Green-Yellow	Completes circuit to step timer unit, thru timer unit disc.

TRIP RELAY BANK CHART

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
BEFORE 5th SELECTOR LOCK TRIP COIL	A-9	J 70	Jumper Orange	Energized thru timer unit disc, when 5th ball is shot.
L1 N.O.	F-8	27-2 78-6	Blue-Orange Orange-Black	Completes circuit to step timer unit.
L2 N.C.	C-9	74-6 J	Orange-Green Jumper	Breaks circuit to coil.
L3 N.C.	J-1	53-2 90	White-Yellow Gray	Breaks circuit to flash "press buttons now" lites.
L4 N.C.	G-38	14-4 98-3	Red-Green Gray-Black	Breaks circuit to magic-screen buttons.
R1 N.O.	C-13	10-6 25-8	Red Blue-White	Completes circuit to energize extra-ball trip relays, during extra-ball play.
R2 N.C.	K-4	31-8 41-8	Yellow-Red Green-Red	Breaks circuit to rollover lites.
R3 N.O.	E-4	18-6 50-2	Red-Black White	Completes circuit to energize start relay, during extra-ball play.
R4 N.C.	C-96	71-7 75-3	Orange-Red Orange-White	Breaks circuit to energize select before 5th relay thru panel rollovers.

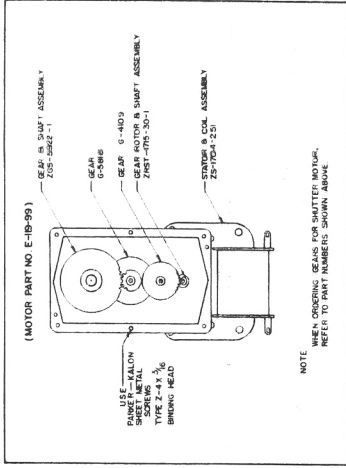
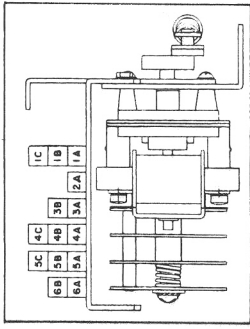
5 RELAY BANK PICTORIAL VIEW LETTERS CORRESPOND TO SWITCH CHART ON PAGE 56



5 RELAY BANK SWITCH CHART FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW ON PAGE 55

RELAY SWITCH	LOCATION ON ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
RIGHT BUTTON RELAY COIL	A-39	45-5 70	Green-White Orange	Energized by right button (on front rail) for moving magic-screen right.
A S.P.D.T.	C-39	48-5 28-6 45-5	Green-Black Blue-White Green-White	Breaks circuit to move left magic screen motor, and completes circuit to move right magic-screen motor. Also completes lock-in circuit for this relay.
B N.O.	B-38	61-4 57-14	Brown-Red White-Orange	Completes circuit to energize magic-screen unit index coil, when moving screen right.
C N.C.	D-38	36-4 36-15	Yellow-Brown Yellow-White	Breaks circuit for moving magic-screen left.
REPLAY RESET RELAY COIL	A-4	75-2 70	Orange-White Orange	Energized when anti-cheat relay drops out.
A S.P.D.T.	C-4	90-5 12-9 53-7	Gray Red-Yellow White-Yellow	Directs replay register reset thru control unit cam switch #2A, when replays are being played, or thru 16 pulse cam #1B, when replays are being cancelled.
B N.O.	G-4	56-2 75-2	White-Brown Orange-White	Completes lock-in circuit for this relay.
C N.O.	G-1	20P 60P	Blue (Plastic) Brown (Plastic)	Completes circuit to run control unit, and mixer-spotting unit motors, when replays are being cancelled.
D N.C.	C-4	21-6 63-2	Blue-Red Brown-Yellow	Breaks start circuit, when replays are being cancelled.
ANTI-CHEAT RELAY COIL	A-27	78-4 70	Orange-Black Orange	Energized thru control unit cam switch #5C. Switches on this relay protect replay scoring, game advantage, and lite circuits.
A S.P.D.T.	G-4	75-2 56-2 50-2	Orange-White White-Brown White	Breaks start relay circuit, and energizes replay reset relay, when this relay drops out.
B N.O.	D-27	78-4 30	Orange-Black Yellow	Completes lock-in circuit for this relay.
C N.O.	L-23	20-4 80-1	Blue Black	Breaks 17 volt circuit, when this relay drops out.
D N.C.	F-13	57-6 80-7	White-Orange Black-White	(Safety circuit) energizes red button relay, when this relay drops out.
E S.P.D.T.	L-21	91-2 35 40	Gray-Red Yellow-Black Green	Breaks 6 volt circuit to score lites, and lites tilt lite, when this relay drops out.
F N.C.	I-7	14-14 30	Red-Green Yellow	(Safety circuit) closes shutter if this relay drops out, when shutter is open.
START RELAY COIL	A-4	21-6 70	Blue-Red Orange	Energized by coin switch, or by red or yellow button (on front door) when playing replays.
A N.C.	B-25	75-4 76	Orange-White Orange-Black	Opens extra-ball step-up circuit, during spin.
B N.C.	F-30	14-8 83-9	Red-Green Black-Yellow	Opens game advantages circuit, during spin.
C N.O.	F-6	13-3 90-9	Red-Yellow Gray	Completes circuit to energize mixer latch, and timer cams index coils.
D N.O.	F-4	48-2 63-2	Green-Black Brown-Yellow	Completes lock-in circuit for this relay.
RED BUTTON RELAY COIL	A-12	85-7 70	Black-White Orange	Energized by red button (on front door).
A S.P.D.T.	C-6	83-2 39-2 14-3	Gray-Yellow Red-Black Red-Green	Breaks circuit to energize mixer latch, and timer cams index coils during extra-ball play, and completes circuit to open shutter when starting new game - after extra ball play.
B N.O.	D-12	27-8 31-7	Blue-Orange Yellow-Red	Completes lock-in circuit for this relay.
C N.C.	K-22	21-4 50-9	Blue-Red White	Breaks circuit to extra ball feature lite.

SHUTTER MOTOR PICTORIAL VIEW

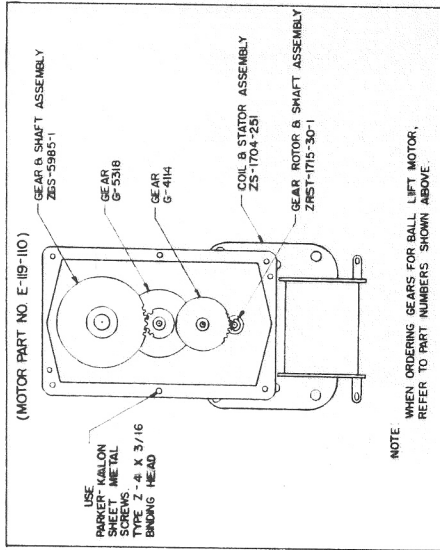
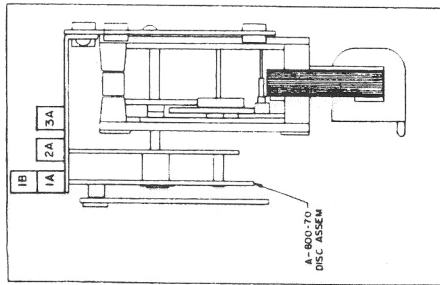


SHUTTER MOTOR CAM SWITCH CHART FOR POSITION OF SWITCHES SEE PICTORIAL VIEW

RELAY SWITCH	LOCATION ON ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
1A	N.C.	14 21-3	Red-Green Blue-Red	(Closed when shutter is closed). Completes circuit for section or in-line replay scoring, thru change-over cam switch.
1B	N.O.	14-3 30	Red-Green Yellow	Completes carry-over circuit to shutter motor.
1C	N.C.	21-3 98-8	Blue-Red Gray-Black	(In series with shutter motor cam switch 5B) (Safety circuit) timer unit reset.
2A	N.C.	31-3 36-3	Yellow-Red Yellow-Brown	(Closed when shutter is closed) completes circuit to lifter motor.
3A	N.O.	85-5 30	Black-White Yellow	Completes circuit to reset extra-ball, yellow, red and green replay counter units, when starting new game.
3B	N.O.	20P 70P	Blue (Plastic) Orange (Plastic)	Completes circuit to reset trip relay bank, when starting new game.
4A	N.O.	14-3 18-3	Red-Green Red-Black	(In series with shutter motor cam switch #4C) Completes circuit to shutter motor, if game is tilted with shutter open.
4B	N.C.	21-3 40-8	Blue-Red Green	(Closed when shutter is closed) Completes circuit to operate magic-screen (left and right). Also completes circuit to panel rollover switches, and front rail collect scores button switch.
4C	N.O.	16-3 45-8	Red-Black Green-White	(See function of switch 4A above.)
5A	N.O.	31-4 61-4	Yellow-Red Gray-Red	(Closed when shutter is open) (Safety circuit) lifter start relay.
5B	N.C.	85-2 98-8	Brown-White Gray-Black	(See function of switch 1C above).
5C	S.P.D.T.	61 13-3 83-2	Brown-Red Red-Yellow Gray-Yellow	Directs circuit to run shutter motor, or energize mixer latch and timer cams index coils.
6A	N.O.	71-6 30	Orange-Red Yellow	Completes circuit to reset timer unit, when starting new game.
6B	N.O.	76-3 30	Orange-Black Yellow	Completes circuit to reset magic screen feature unit, and yellow, red, and green score units, when starting new game.

NOTE: WHEN CHECKING GEAR FOR SHUTTER MOVING, REFER TO PART NUMBERS SHOWN ABOVE.

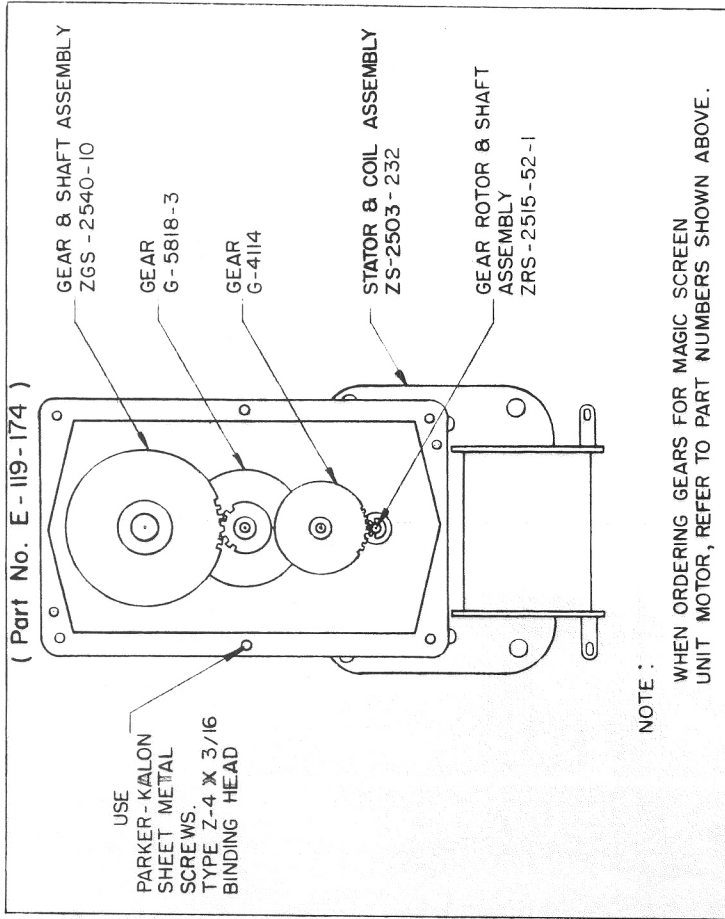
BALL LIFT MOTOR PICTORIAL VIEW



BALL LIFT MOTOR CAM SWITCH CHART FOR POSITION OF SWITCHES SEE PICTORIAL VIEW

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
1A	N.C.	15-6 85-6	Red-White Black-White	(Safety circuit) for before 5th selector lock trip relay.
1B	N.O.	81-1 30	Grey-Red Yellow	Completes carry-over circuit to ball lift motor.
2A	N.O.	27-2 43-2	Blue-Orange Green-Yellow	Completes circuit to energize timer unit step-up coil.
3A	N.O.	21-3 89-7	Blue-Red Black-Yellow	Completes circuit to energize before 4th selector lock relay, thru timer unit disc.

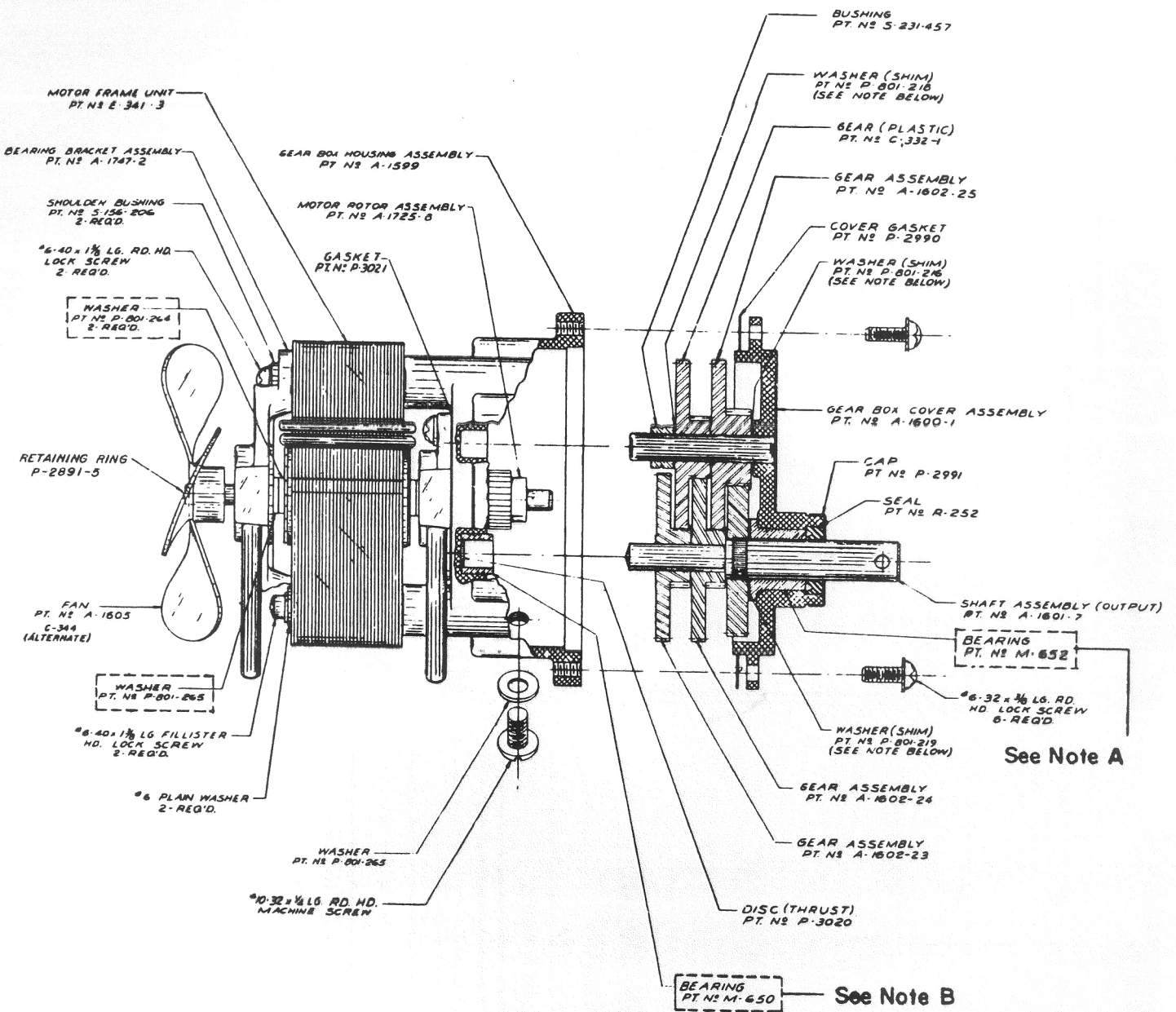
MAGIC SCREEN UNIT MOTOR



MAGIC SCREEN UNIT PARTS

AS-1809	Complete Magic Screen Unit assembly
W-851	Contact Plate
27GG-13	Coil
A-613-33	Core Plug for 27GG-13 Coil
P-163-32	Key Washer
M-943	Ladder Chain
P-801-310	Leather Washer
E-119-174	Motor
A-316-64	Plunger for 27GG-13 Coil

MOTOR ASSEMBLY (Part No. E-119-157)



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.

CHECK PART NUMBER ON GEAR BEFORE ORDERING GEAR

NOTE A: Bearing M-652 is part of Gear Box Cover Assembly A-1600-1 and cannot be ordered separately.

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

MISCELLANEOUS PARTS

Back Cabinet Assembly:

Part No.	Name of Part
G-292	Back glass
M-281-14	Lock and keys (2) keyed alike
E-122-19	Transformer

Back Door Assembly:

M-281-24	Lock and Keys (2) keyed alike
E-300-115	Search relay bank assembly

Front Cabinet Assembly:

M-168-15	Ball
AS-187-13	Ball shooter assembly
A-1540	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-1900-18	Coin box
A-1726	Coin box cover
E-130-10	Counter—48 volt
P-4052	Legs
M-106-1	Leg bolt
M-163-4	Leg adjuster
E-108-57	Toggle switch

Front Door Assembly:

Part No.	Name of Part
A-1729-4	Button—metal
C-2342-102	Coil for coin kicker assembly
E-101-45	Coil for coin lock out
AS-1316	Coin kicker assembly
AS-277-33	Coin switch assembly 5¢
AS-277-34	Coin switch assembly 10¢
CA-567-72	Front door only
AS-1841	Front door assembly 5¢
AS-1841-1	Front door assembly 10¢
A-254-33	Hinge and bracket
M-281-6	Lock and keys
E-108-32	Micro switch for coin switch assembly 5¢ and 10¢ play
P-2768-5	Ring-red for A-1729-4 button
P-2768-6	Ring-yellow for A-1729-4 button
P-2768-7	Ring for M-281-6 lock
M-280-15	Slug rejector 5¢
M-280-16	Slug rejector 10¢

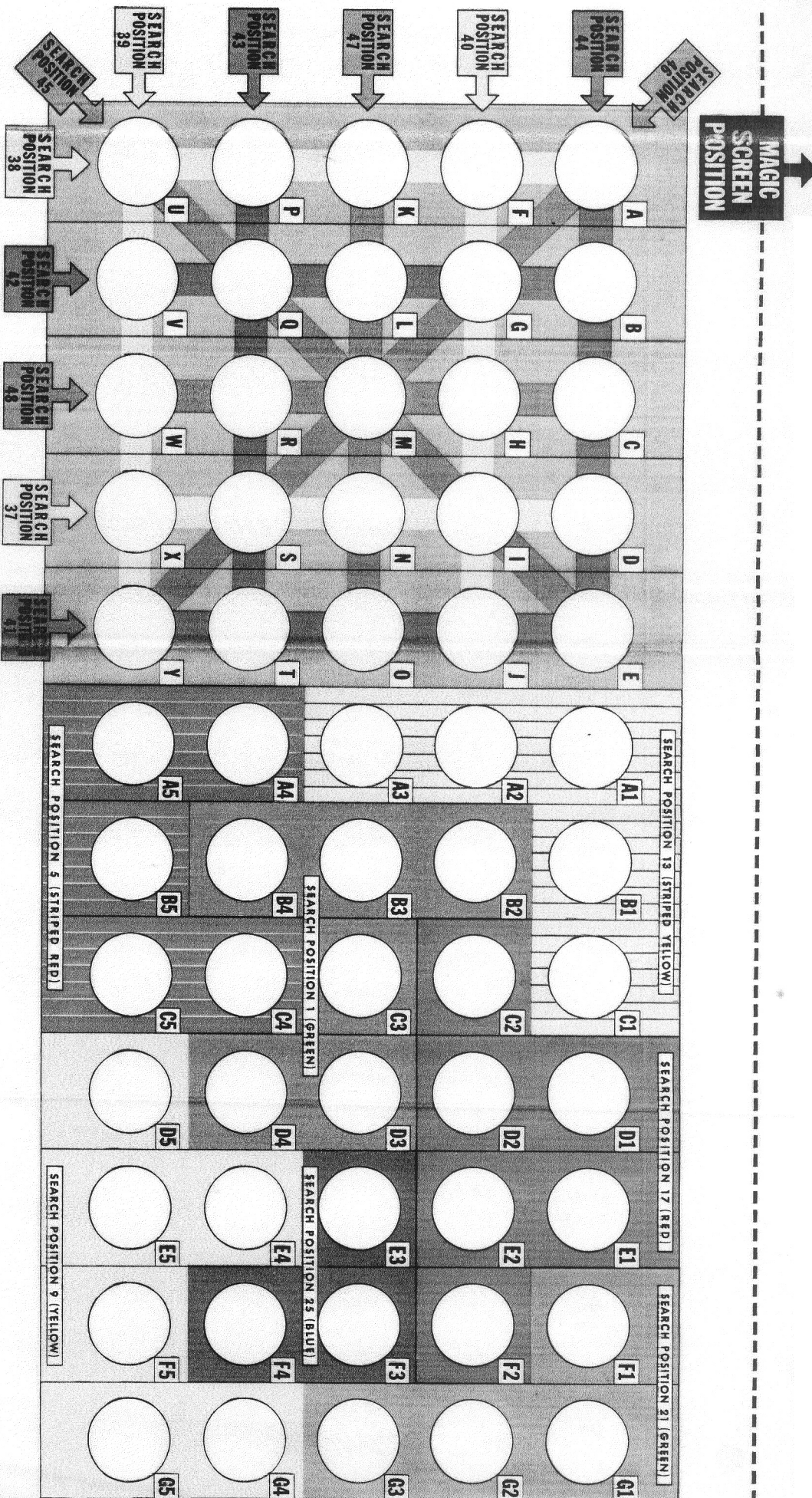
Front Moulding Assembly:

AS-1305-13	Front moulding assembly complete
A-1272-29	"R" Button
A-1272-30	Right Button
A-1272-31	Left Button
P-2210-8	5¢ Plate
P-2210-10	10¢ Plate
P-2210-33	Plate for Left & Right button
P-2210-38	Plate for "R" Button
CA-960-2	Front moulding only

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
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.



Place colored reproduction of Magic Screen (FORM CARNIVAL QUEEN 1001-B) on top of number card (FORM CARNIVAL QUEEN 1001-A) so that dotted lines on colored form line up with dotted lines on card form. Then slide colored form left or right until MAGIC SCREEN POSITION arrow points to desired position (START, A, B, C, D, E, F, G). All search position information on colored form will then be in proper relation to score-numbers that you may wish to check by reference to SEARCH POSITION CHART and pictorial view of Search Disc (in manual).

FORM CARNIVAL QUEEN 1001-B

G F E D C B A START

9 1 2 11 15

4 19 7 22 18

25 24 16 13 17

6 23 5 21 20

12 8 14 3 10

SEARCH POSITIONS CHART

	RED WIPER AT POSITION	WIPER (D) ROW 4 SEARCH RE. #1	WIPER (F) ROW 6 SEARCH RE. #2	WIPER (G) ROW 8 SEARCH RE. #3	WIPER (E) ROW 5 SEARCH RE. #4	WIPER (C) ROW 2 SEARCH RE. #5	WIPER (H) ROW 7 SEARCH RE. #6
GREEN SECTION	1	B2	B3	B4	C3	D3	D4
	2						
	3						
	4						
RED SUPER SECTION	5	A4	A5	B5	C4	C5	
	6						
	7						
YELLOW SECTION	8						
	9	D5	E4	E5	F5	G4	G5
	10						
YELLOW SUPER SECTION	11						
	12						
	13	A1	B1	C1	A2	A3	
RED SECTION	14						
	15						
	16						
GREEN SECTION	17	D1	E1	C2	D2	E2	F2
	18						
	19						
GREEN SECTION	20						
	21	F1	G1	G2	G3		
	22						
BLUE SECTION	23						
	24						
	25	E3	F3	F-4			
YELLOW	26						
	27						
	28						
	29						
	30						
	31						
	32						
	33						
	34						
	35						
	36						
RED	VERTICAL	37	D	I	N	S	X
	VERTICAL	38	A	F	K	P	U
	HORIZONTAL	39	U	V	W	X	Y
GREEN	HORIZONTAL	40	F	G	H	I	J
	VERTICAL	41	E	J	O	T	Y
	VERTICAL	42	B	G	L	Q	V
GREEN	HORIZONTAL	43	P	Q	R	S	T
	HORIZONTAL	44	A	B	C	D	E
	DIAGONAL	45	E	I	M	Q	U
GREEN	DIAGONAL	46	A	G	M	S	Y
	HORIZONTAL	47	K	L	M	N	O
	VERTICAL	48	C	H	M	R	W
	49						
	50						