

Bally[®]

TOUCHDOWN

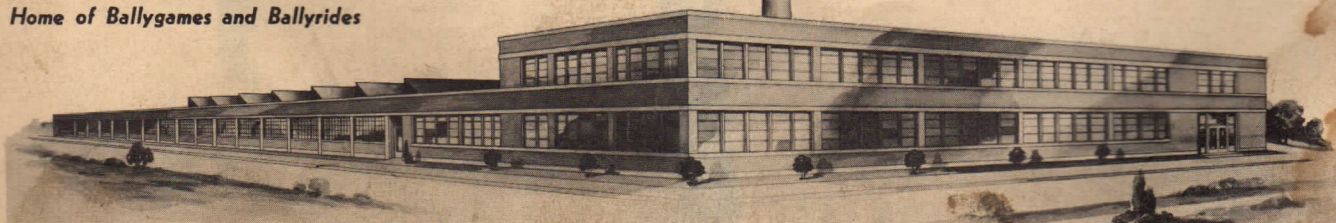
OPERATING INSTRUCTIONS AND PARTS CATALOG

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

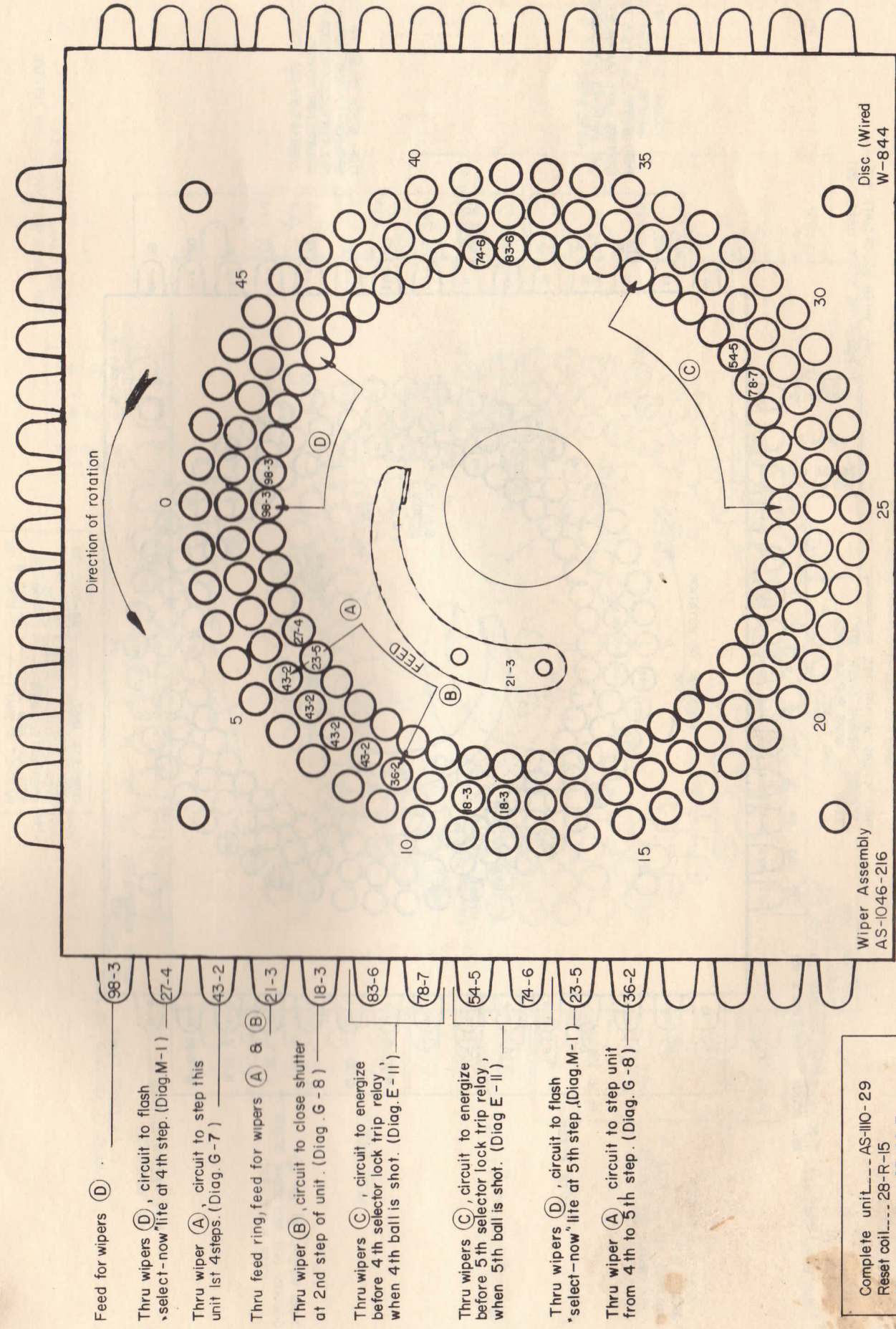
Home of Ballygames and Ballyrides

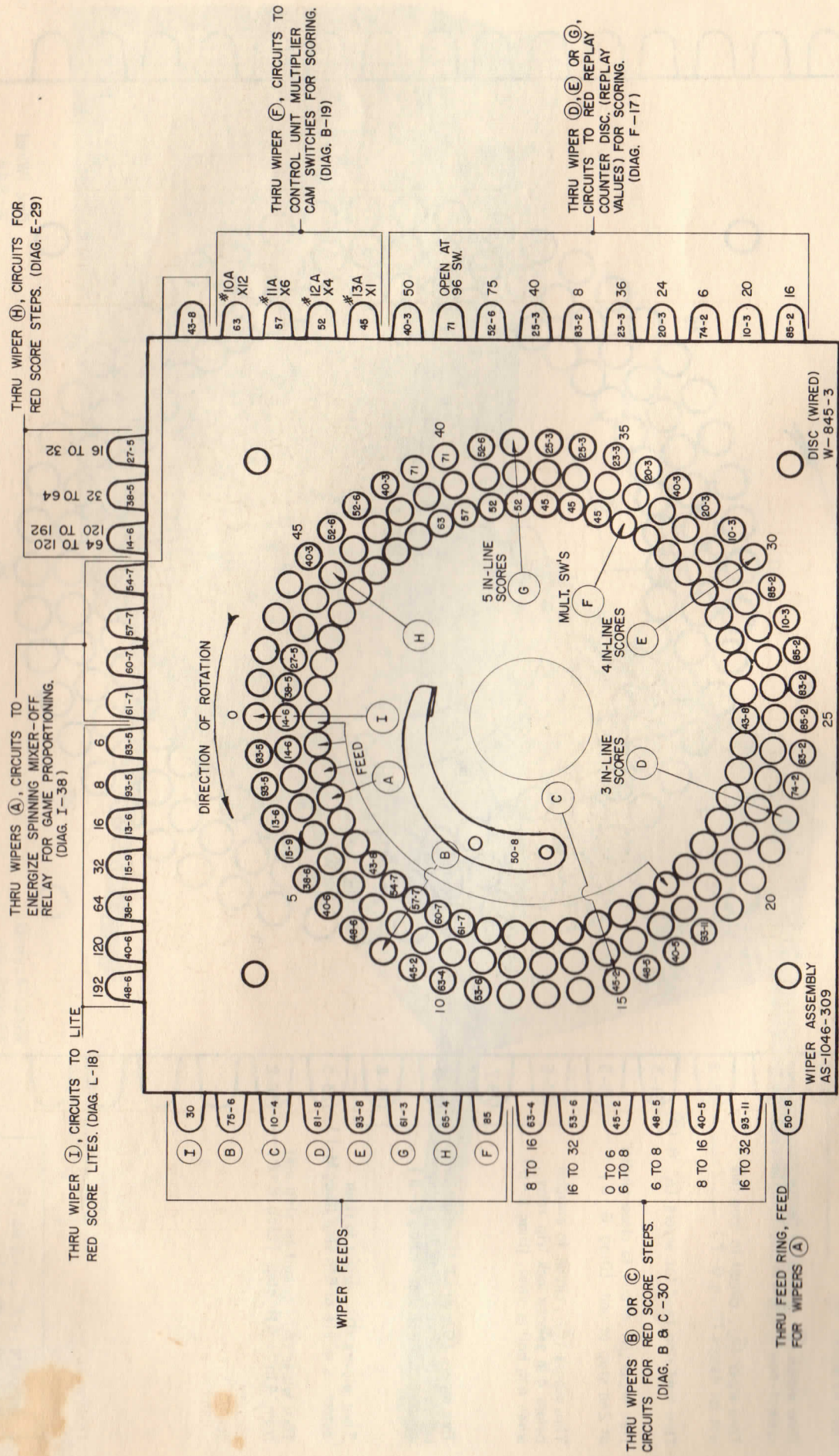




TIMER UNIT viewed from **BUTTON** or **WIPER** side

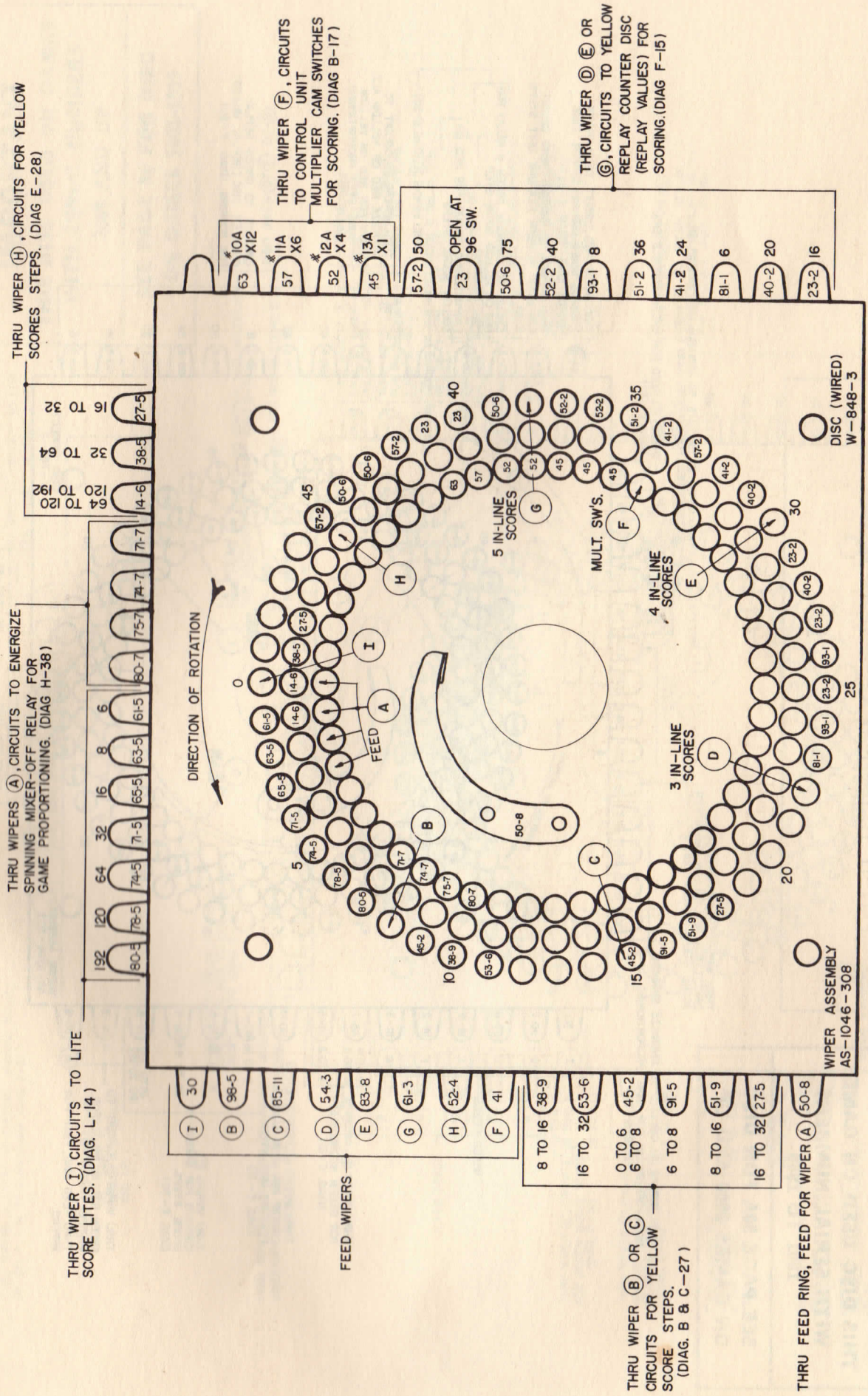
8 step unit. Wipers shown in zero or reset position





COMPLETE UNIT — AS-1022-60
RESET COIL — 28-R-15
STEP-UP COIL — 25-GG-7
STEP-UP PLUNGER — S-496-100
STEP-UP ARM ASS'Y. — A-1765-8
RATCHET & SHAFT — C-1050-7-38

YELLOW SCORE UNIT viewed from BUTTON or WIPER side



COMPLETE UNIT — AS-1022-59
RESET COIL — 28-R-15
STEP-UP COIL — 25-GG-7
STEP-UP PLUNGER — S-496-100
STEP-UP ARM ASS'Y. — A-1765-8
RATCHET & SHAFT — C-1050-7-38

SEE PAGE 90A FOR DISC
ON GAMES 2000 AND UP

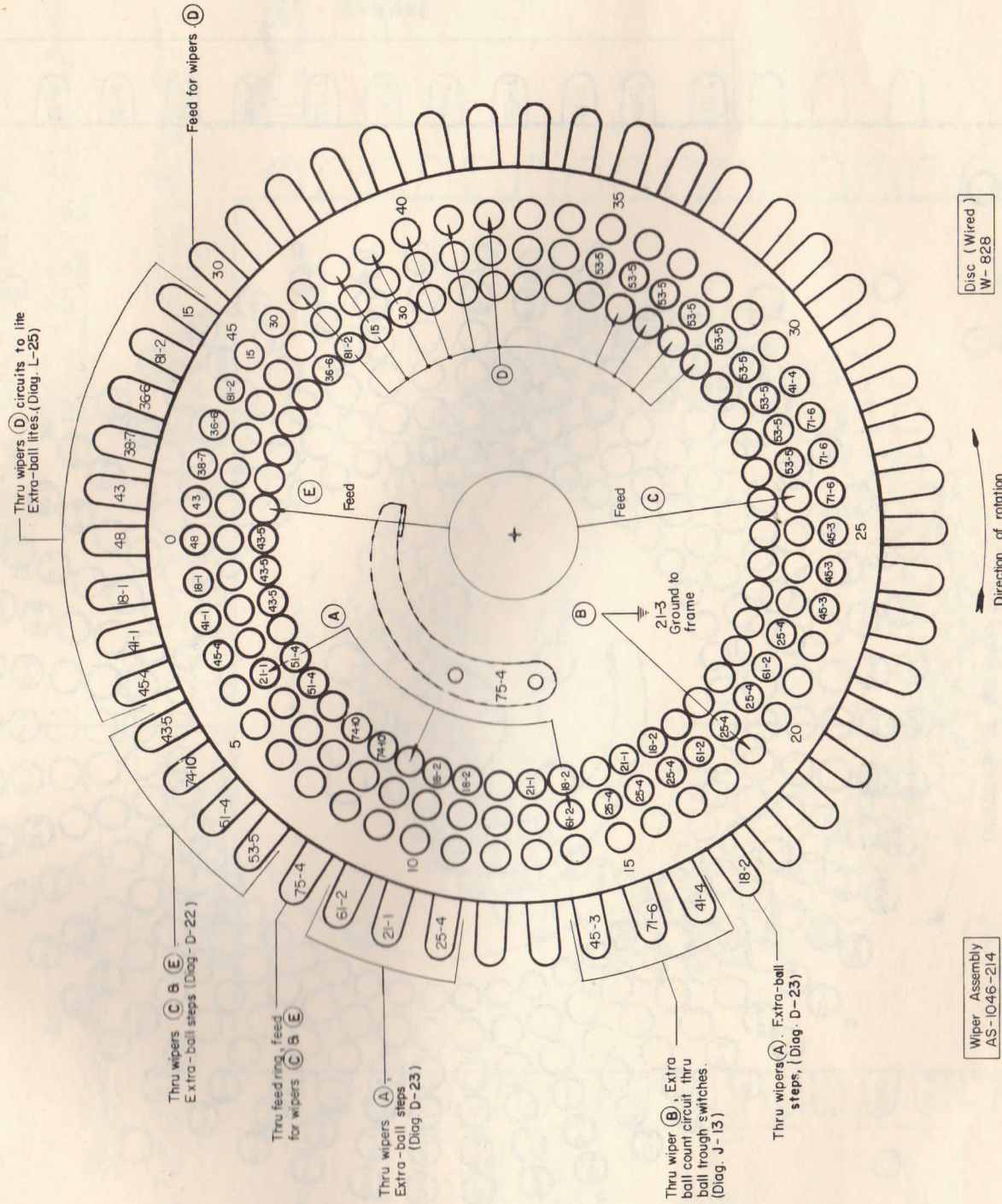
8 step unit. Wipers shown in zero or reset position

**SEE PAGE 90 FOR DISC
ON GAMES 1001-1999**

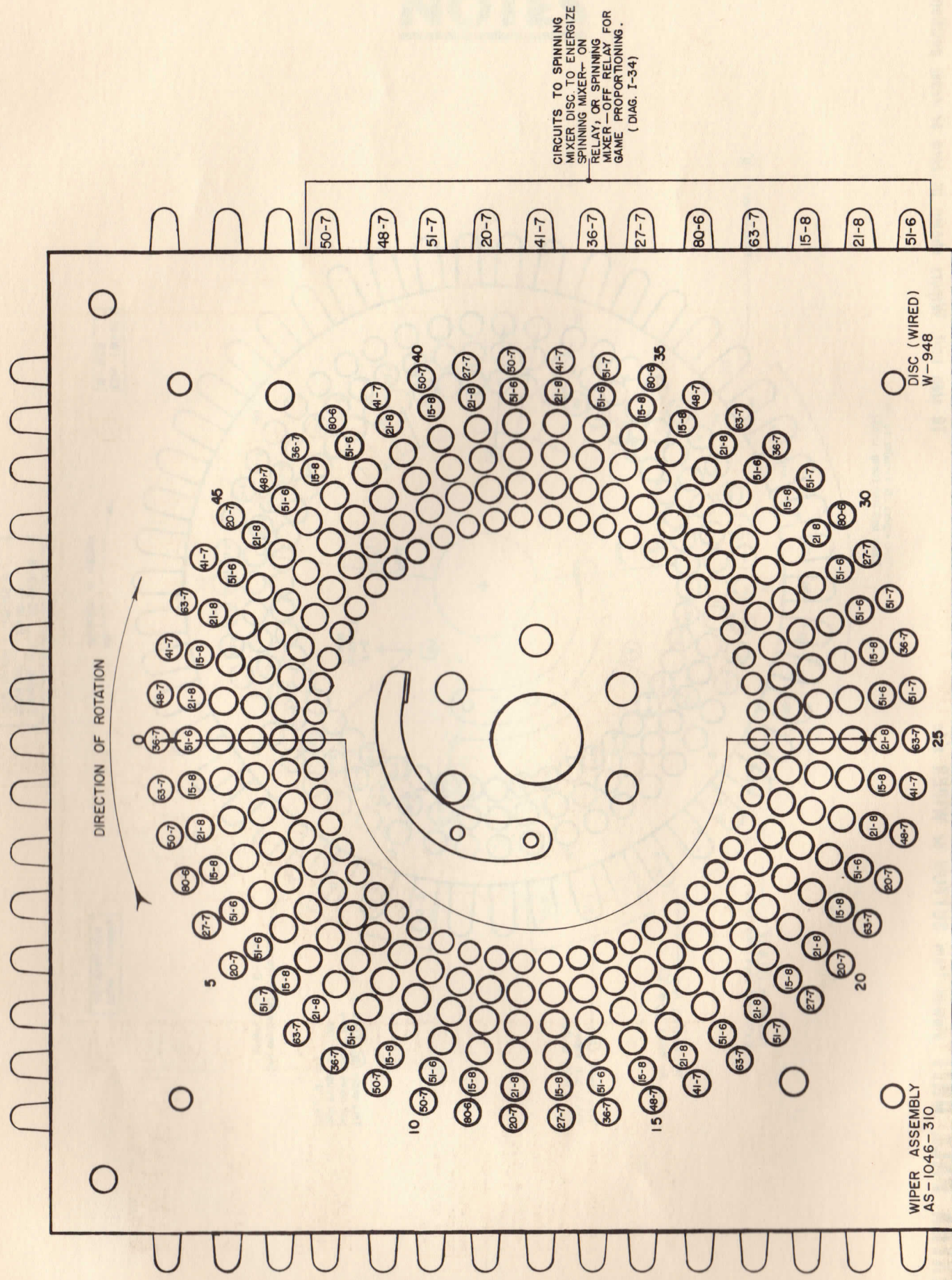
NOTES

EXTRA BALL UNIT viewed from BUTTON or WIPER side

10 step unit. Wipers shown in zero or reset position

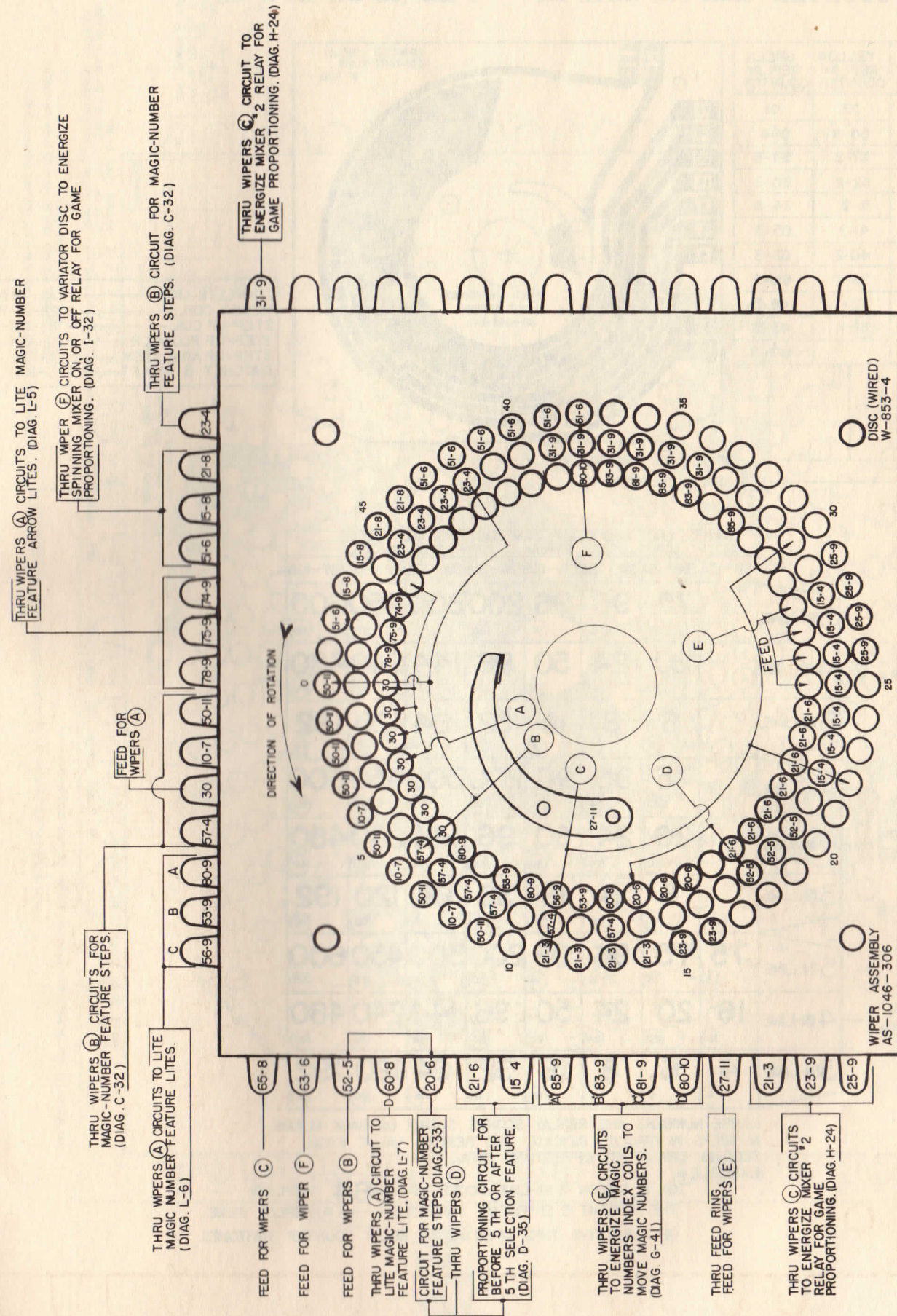


Complete unit --- AS-1148-16
Reset coil --- 28-R-15
Step-up coil --- 25-GG-7
Step-up plunger --- S-496-100
Step-up arm --- A-1765-4
Ratchet & shaft --- C-1050-10



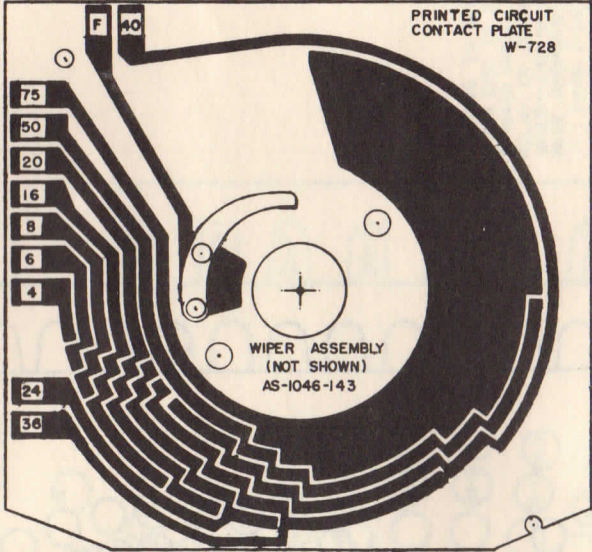
MAGIC NUMBERS FEATURE UNIT viewed from BUTTON or WIPER side

10 step unit. Wipers shown in zero or reset position



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

LUG NO.	RED REPLAY COUNTER	YELLOW REPLAY COUNTER	GREEN REPLAY COUNTER
F	71	23	91
75	52-6	50-6	61-6
50	40-3	57-2	54-6
40	25-3	52-2	80-3
36	23-3	51-2	74-3
24	20-3	41-2	65-3
20	10-3	40-2	63-3
16	85-2	23-2	60-3
8	83-2	93-1	48-3
6	74-2	81-1	43-3
4			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 ASSY. _____ A-1765-4
RATCHET & SHAFT _____ C-100

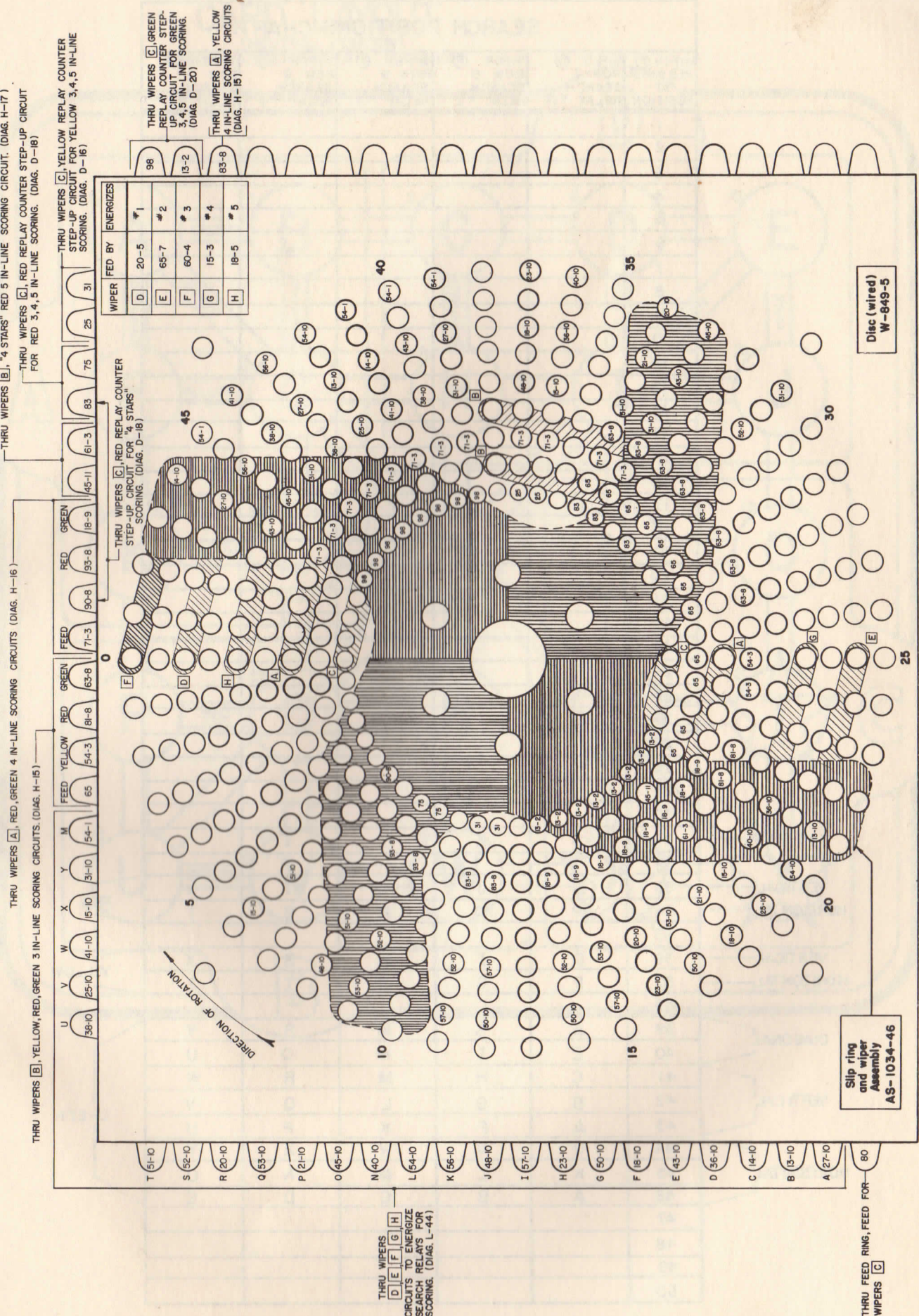
WIRE COLOR NUMBERS
REPLAY VALUES

		CONTROL UNIT MULTIPLIER CAM SWITCHES THAT PULSE RED, YELLOW & GREEN REPLAY COUNTER STEP-UP COILS							
		SW-13A	SW-13A	SW-13A	SW-13A	SW-12A	SW-12A	SW-11A	SW-10A
RED SCORES	5 IN-LINE		75	96	96	200	300	450	600
	4 IN-LINE		20	24	50	96	144	240	480
	3 IN-LINE		6	8	16	32	64	120	192
YELLOW SCORES	5 IN-LINE		75	96	96	200	300	450	600
	4 IN-LINE		20	24	50	96	144	240	480
	3 IN-LINE		6	8	16	32	64	120	192
GREEN SCORES	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 CIRCLES INDICATE THE REPLAY VALUE EACH SCORING CIRCUIT IS EFFECTIVE THRU.

EXAMPLE:-
ON A GREEN 3 IN-LINE SCORE OF **64** REPLAYS
THE CIRCUIT IS EFFECTIVE THRU THE **16** REPLAY VALUE.
(*) EFFECTIVE THRU OPEN AT 96 REPLAY COUNTER SWITCHES.

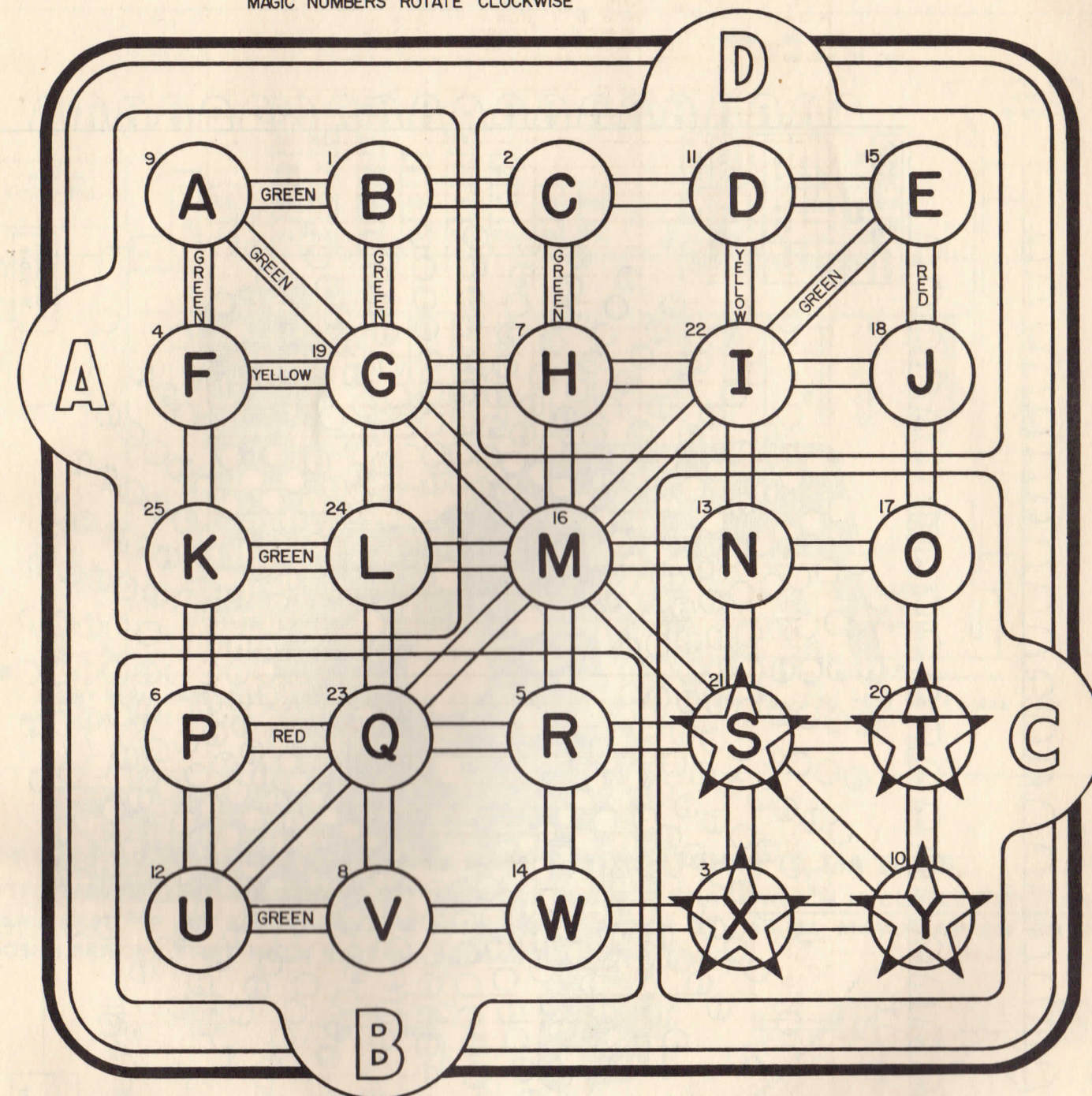
SEARCH DISC viewed from BUTTON or WIPER side

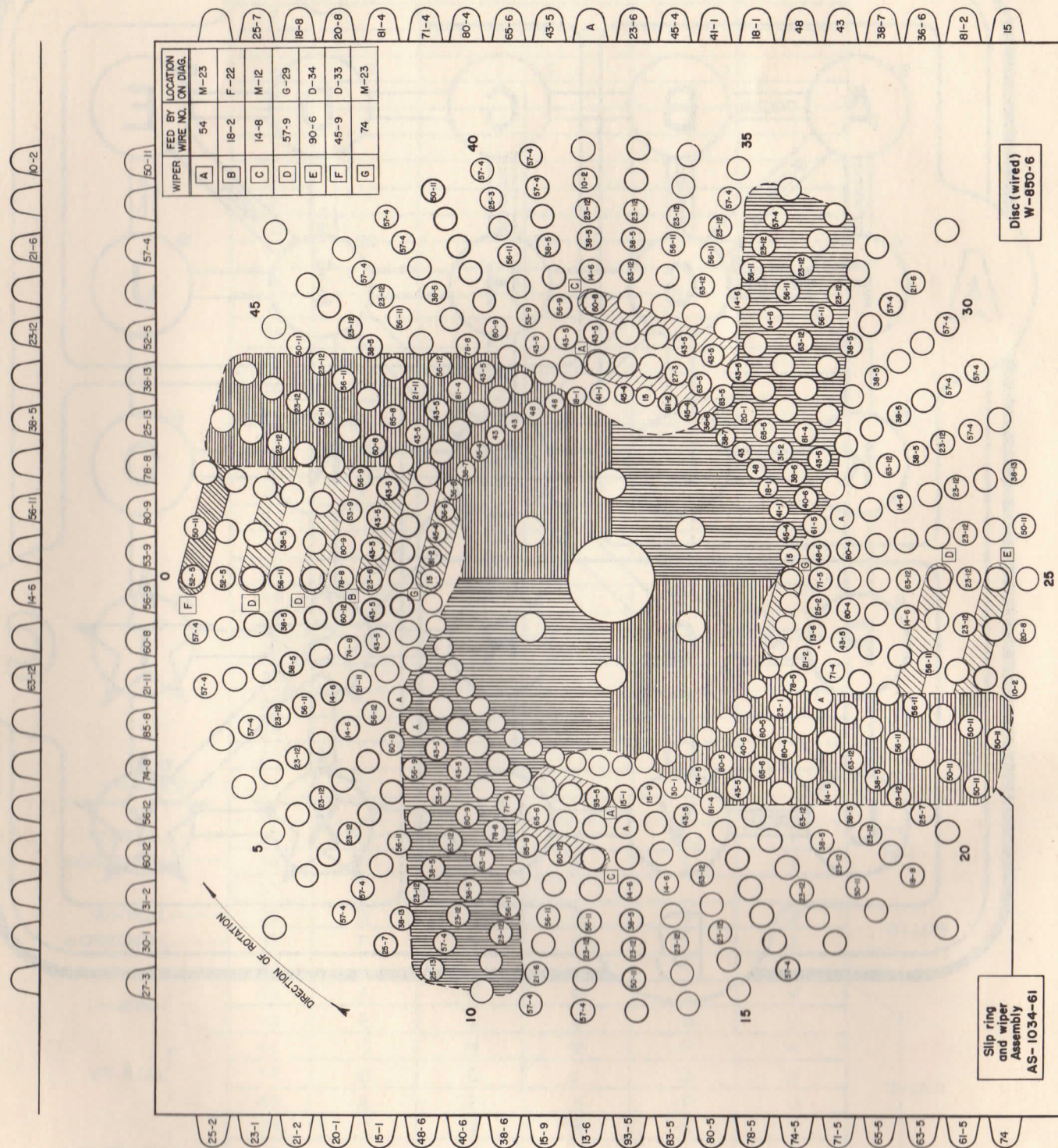


SEARCH POSITIONS CHART.

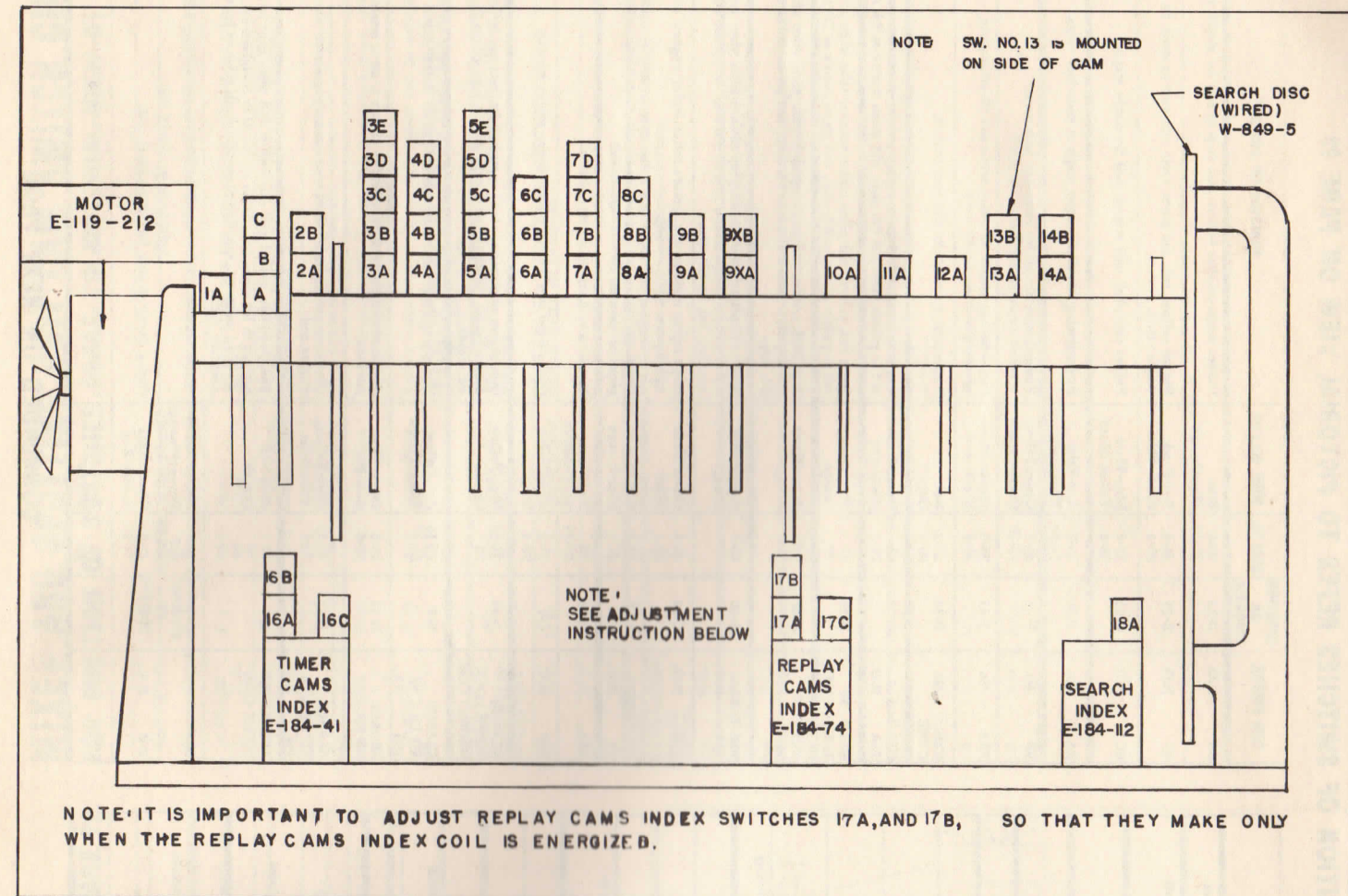
	WIPER ① RED WIPER AT POSITION	WIPER ② ROW 7 SEARCH RELAY # 1	WIPER ③ ROW 8 SEARCH RELAY # 2	WIPER ④ ROW 9 SEARCH RELAY # 3	WIPER ⑤ ROW 6 SEARCH RELAY # 4	WIPER ⑥ ROW 5 SEARCH RELAY # 5
1						
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27						
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29						
30						
31		S	X	Y	T	
32						
33	VERTICAL	E	J	O	T	Y
34	HORIZONTAL	P	Q	R	S	T
35						
36	VERTICAL	D	I	N	S	X
37	HORIZONTAL	F	G	H	I	J
38						
39	DIAGONAL	A	G	M	S	Y
40		E	I	M	Q	U
41		C	H	M	R	W
42	VERTICAL	B	G	L	Q	V
43		A	F	K	P	U
44		U	V	W	X	Y
45	HORIZONTAL	K	L	M	N	O
46		A	B	C	D	E
47						
48						
49						
50						

CARD LAYOUT (NEUTRAL POSITION) MAGIC NUMBERS ROTATE CLOCKWISE



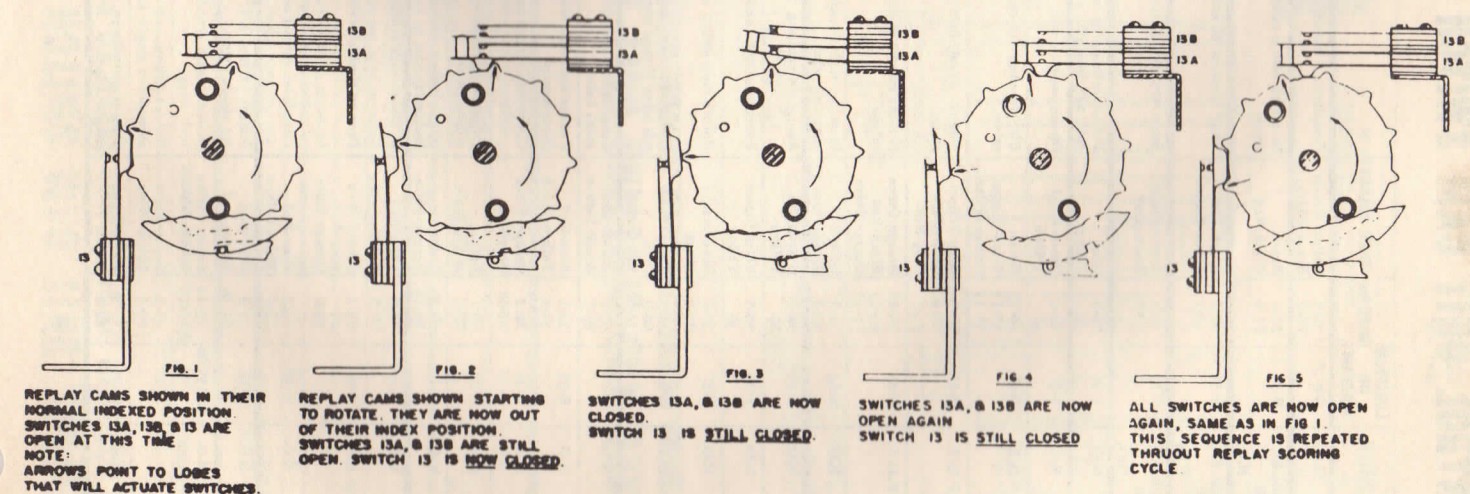


CONTROL UNIT PICTORIAL VIEW NUMBERS CORRESPOND TO SWITCH CHART ON PAGE 100



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 99

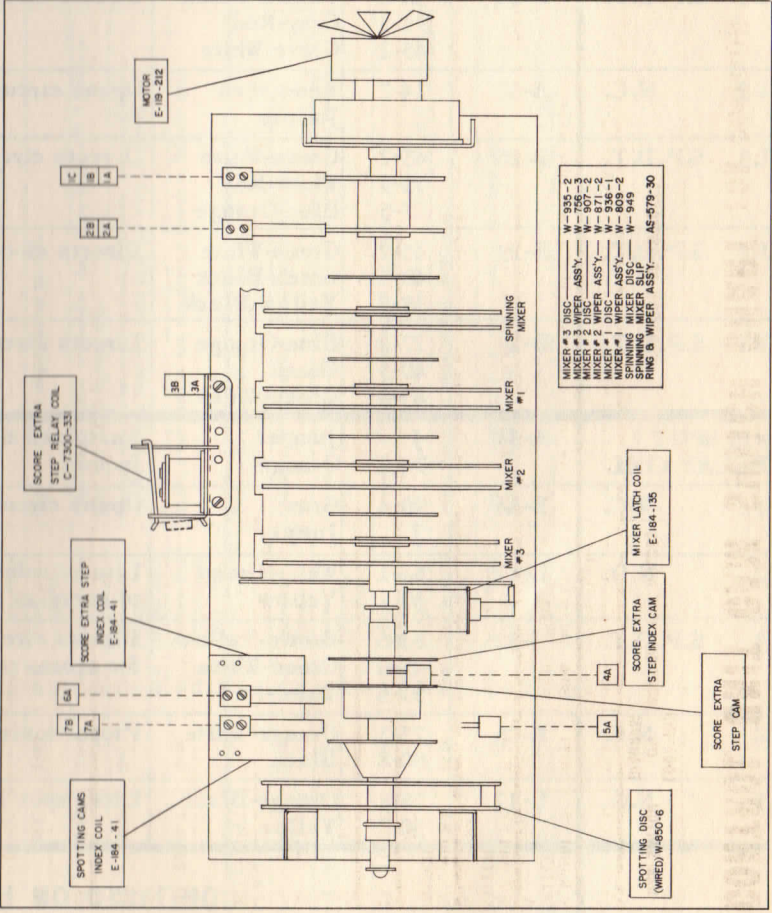
CAM SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
1A N.O.	G-8	36-9 65-2	Yellow-Brown Brown-White	Completes a circuit to stop timer unit after 5th ball is shot.
SCRAMBLER SWITCH A	H-33	80-6 81-6	Black Black-Red	In series with a circuit to energize spinning mixer-on or off relay.
SCRAMBLER SWITCH B	H-34	41-7 43-7	Green-Red Green-Yellow	Same function as scrambler switch A.
SCRAMBLER SWITCH C	H-35	48-7 52-7	Green-Black White-Blue	Same function as scrambler switch A and B.
2A N.O.	J-3	90-5 30	Gray Yellow	Pulses reflex play magnet coil, replay register unit reset coil, and total plays meter, when playing replays.
3A N.C.	J-5	48-2 30	Green-Black Yellow	Opens start circuit.
3B S.P.D.T.	D-47	60-13 57-13 75-13	Brown White-Orange Orange-White	Directs circuit to energize, and lock-in play scores relay.
3C S.P.D.T.	B-15	93-7 98-4 91-7	Gray-Yellow Gray-Black Gray-Red	Directs circuit from replay meter to total plays meter.
3D S.P.D.T.	D-46	74-16 81-15 75-13	Orange-Green Black-Red Orange-White	Directs circuit to energize, and lock-in play features relay.
3E N.O.	K-32	21-3 45-6	Blue-Red Green-White	In series with circuit to energize spinning mixer-on or spinning mixer-off relay.
4A N.O.	E-50	98-1 30	Gray-Black Yellow	Energizes spotting cams index coil.
4B N.O.	F-44	56-5 30	White-Brown Yellow	Energizes score extra-step relay.
4C N.O.	G-6	27-9 80-2	Blue-Orange Black	Pulses coin meter, when coin meter is used in game.
4D S.P.D.T.	H-5	13-9 90-9 14-5	Red- Yellow Gray Red-Green	(Safety circuit) opens start circuit, and completes circuit to tilt relay if coin switch closed too long.
5A N.O.	G-9	65-2 83-1	Brown-White Black-Yellow	Completes a circuit to reset timer unit when playing for extra balls.
5B N.O.	B-22	21-1 38-4	Blue-Red Yellow-Black	Pulses extra-ball unit step-up coil for single steps.
5C N.O.	E-24	78-4 91-11	Orange-Black Gray-Red	Completes circuit to energize anti-cheat relay.
5D N.O.	G-31	10-7 85-4	Red Black-White	Pulses magic-number feature unit step-up coil for guaranteed single steps.
5E N.C.	D-45	40-15 75-13	Green Orange-White	Opens lock-in circuit to features lock relay or scores lock relay.
6A N.C.	J-30	51-5 80-8	White-Red Black	In series with circuit for game advantages.
6B S.P.D.T.	B-6	93-2 21 75-8	Gray-Yellow Blue-Red Orange-White	Directs circuit to energize timer cams index coil.
6C N.O.	H-38	21-3 55-8	Blue-Red White-Yellow	Completes circuit to variator motor.
7A N.O.	I-31	21-3 61-10	Blue-Red Brown-Red	Pulses yellow, red, and green score unit step-up coils for single steps.
7B N.O.	E-45	43-14 75-13	Green-Yellow Orange-White	In series with circuit to energize features lock relay, or scores lock relay.
7C N.O.	D-27	45-2 85-4	Green-White Black-White	Pulses yellow, red, and green score unit step-up coils for guaranteed single steps.
7D N.O.	G-29	57-9 60-6	White-Orange Brown	Pulses yellow, red, and green score unit step-up coils for single steps.

CONCLUDED ON NEXT PAGE

CONTROL UNIT CAM SWITCH CHART
FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW ON PAGE 99

CAM SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
REPLAY CAMS INDEX COIL	A-14	40-4 70	Green Orange	Energized by search index switch #18A when a score is made, and releases replay cams for scoring.
17A N.O.	F-14	27 80	Blue-Orange Black	In series with replay scoring lock-in circuit. (See control unit pictorial view for correct adjustment)
17B N.O.	I-15	14 57-11	Red-Green White-Orange	In series with circuit for replay scoring. (See control unit pictorial view for correct adjustment)
17C N.C.	C-13	15-2 80	Red-White Black	Opens direct 50 volt circuit to search index coil, coil then held in thru 15 ohm 10 watt resistor.
SEARCH INDEX COIL	A-14	15-2 70	Red-White Orange	Energized thru search disc to stop search disc wipers at scoring position.
18A N.O.	B-14	40-4 80	Green Black	Completes circuit to replay cams index coil.

MIXER AND SPOTTING UNIT ASSEMBLY
NUMBERS CORRESPOND TO SWITCH CHART AT RIGHT



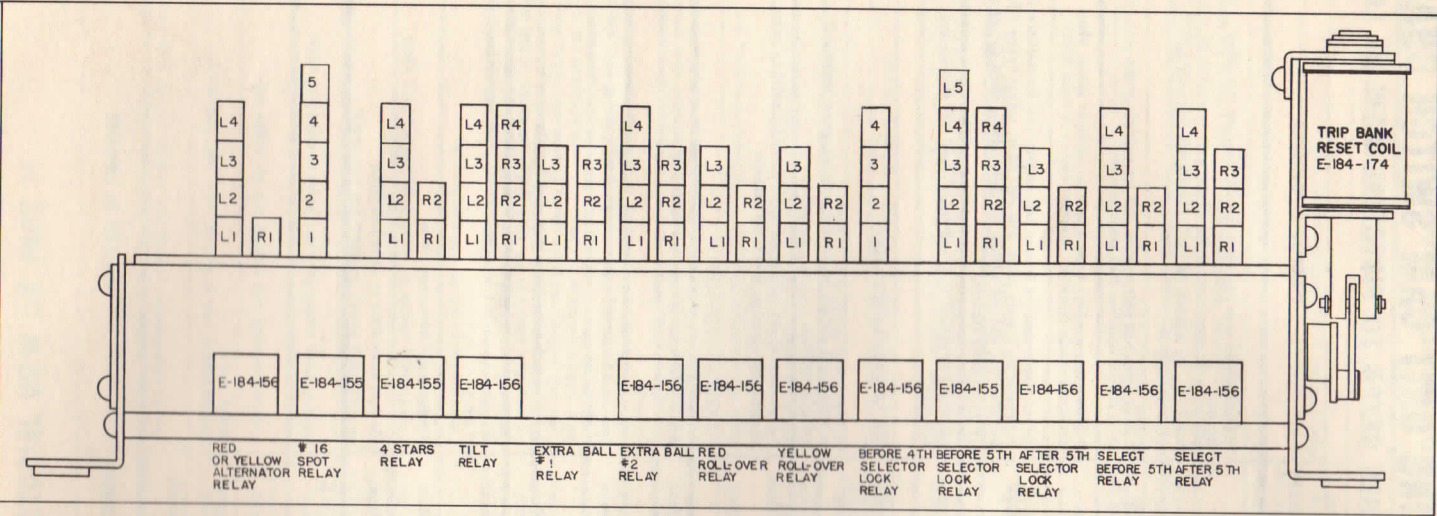
CONTROL UNIT CAM SWITCH CHART FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW ON PAGE 99

CAM SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
8A N.O.	D-32	20-6 27-12	Blue Blue-Orange	Pulses magic-number feature unit step-up coil for single steps.
8B N.O.	E-25	18-4 85-4	Red-Black Black-White	Pulses yellow, red, and green score unit step-up coils for single steps.
8C N.O.	B-23	25-4 38-4	Blue-White Yellow-Black	Pulses extra-ball unit step-up coil for single steps.
9A Alt.	I-29	15-7 54-8	Red-White White-Green	Proportioning circuit for score steps or extra-ball steps.
9B Alt.	E-22	43-5 74-10	Green-Yellow Orange-Green	Proportioning circuit for extra-ball unit steps.
9XA Alt.	J-25	75-5 80-8	Orange-White Black	Proportioning circuit for score steps and all other game advantages.
9XB Alt.	B-34	10-2 90-4	Red Gray	Proportioning circuit for #16 spot feature.
MULT. X12 10A N.O.	A-18	63 70	Brown-Yellow Orange	Steps red, yellow and green replay counter units when scoring with red or yellow scores at 7th step, and green scores at 8th step.
MULT. X6 11A N.O.	A-18	57 70	White-Orange Orange	Steps red, yellow, and green replay counter units when scoring with red or yellow scores at 6th step, and green scores at 7th step.
MULT. X4 12A N.O.	A-17	52 70	White-Blue Orange	Steps red, yellow, and green replay counter units when scoring with red or yellow scores at 4th or 5th step, and green scores at 5th or 6th step.
MULT. X1 13A N.O.	A-16	45 70	Green-White Orange	Steps red, yellow, and green replay counter units when scoring with red or yellow scores at 1st, 2nd, or 3rd step, and green scores at 1st, 2nd, 3rd, or 4th step.
13B N.O.	C-14	48-4 80	Green-Black Black	Steps replay register unit, pulses reflex replay magnet, and replay meter when scoring.
(BACKSIDE) 13 N.O.	I-14	21-3 27	Blue-Red Blue-Orange	Completes replay scoring lock-in circuit. (See control unit pictorial view for correct adjustment)
14A N.C.	J-15	14 57-11	Red-Green White-Orange	In series with replay scoring circuit.
14B N.C.	C-7	27-2 90-2	Blue-Orange Gray	Opens timer unit step-up circuit during replay scoring.
SEARCH WIPER LOCK MAGNET COIL	A-43	23-16 70	Blue-Yellow Orange	(Not shown on pictorial view) energized by front rail collect scores button switch (R) to release search disc wipers to search for scores.
SEARCH WIPER CAM 15A N.C.	B-5	13-16 83-3	Red-Yellow Black-Yellow	(Not shown on pictorial view) opens circuit to start relay.
SEARCH WIPER CAM 15B N.C.	H-41	45-5 91-6	Green-White Gray-Red	(Not shown on pictorial view) opens circuit to move magic numbers.
SEARCH WIPER CAM 15C N.C.	D-43	23-16 52-9	Blue-Yellow White-Blue	(Not shown on pictorial view) opens circuit to search wiper lock magnet coil.
TIMER CAMS INDEX COIL	A-7	21 70	Blue-Red Orange	Energized thru control unit cam switch #6B when start relay is energized to let timer cams begin cycle. Also energized by switch on spinning mixer-on, spinning mixer-off, or tilt relay to let timer cams complete cycle.
16A N.O.	G-1	20P 60P	Blue (Plastic) Brown (Plastic)	Completes a circuit to control unit, and mixer spotting unit motors.
16B N.C.	H-6	27-9 71-2	Blue-Orange Orange-Red	Opens circuit to coin lock-out magnet coil.
16C N.C.	H-12	13 30	Red-Yellow Yellow	Opens circuit to red button relay, and extra-ball relays.

MIXER AND SPOTTING UNIT CAM SWITCH CHART
FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW AT LEFT

CAM SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
16 PULSE 1A N.O.	K-2	80-9 90	Black Gray	Flashes select now lite when circuit complete thru other factors.
16 PULSE 1B 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 1C N.O.	B-22	38-4 78	Yellow-Black Orange-Black	Pulses extra-ball unit step-up coil for multiple steps, when circuit complete thru other factors.
16 PULSE 2A N.O.	G-31	13-7 85-4	Red-Yellow Black-White	Pulses magic-numbers feature unit for multiple steps, when circuit complete thru other factors.
16 PULSE 2B N.O.	E-33	45-9 27-12	Green-White Blue-Orange	Pulses magic-numbers feature unit step-up coil for multiple steps, and energizes 4 stars relay, #16 spot relay, select before 5th, select after 5th, and red, yellow roll-over relays, when circuit complete thru other factors.
SCORE EXTRA-STEP RELAY COIL	A-9	43-6 70	Green-Yellow Orange	Energized by yellow, red, and green score unit step-up arm switches.
3A N.O.	C-10	43-6 81-5	Green-Yellow Black-Red	Lock-in circuit for this relay.
3B N.O.	E-27	50-4 90-3	White Gray	In series with circuit for yellow, red, and green score unit multiple steps.
SCORE EXTRA-STEP PULSE SWITCH 4A N.O.	F-27	43-4 50-4	Green-Yellow White	Pulses yellow, red, and green score units for multiple steps, when circuit complete thru other factors.
SQUAREPIN SWITCH 5A	D-10	13-5 21-5	Red-Yellow Blue-Red	Opens lock-in circuit to score extra-step relay.
SCORE EXTRA-STEP INDEX COIL	A-44	56-5 70	White-Brown Orange	Energized by control unit cam switch #4B, during each spin of game.
6A N.O.	C-10	13-5 81-5	Red-Yellow Black-Red	In series with score extra-step relay lock-in circuit.
SPOTTING CAMS INDEX COIL	A-50	98-1 70	Gray-Black Orange	Energized by control unit cam switch #4A during each spin of game.
7A N.O.	K-13	45-7 30	Green-White Yellow	Flashes game advantage lites.
7B N.O.	K-23	13-4 30	Red-Yellow Yellow	Flashes score lites or extra-ball lites.

TRIP RELAY BANK PICTORIAL VIEW NUMBERS CORRESPOND TO SWITCH CHART BELOW



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

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
RED OR YELLOW ALTERNATOR RELAY COIL	A-32	J 70	Jumper Orange	Energized thru green score disc (at zero) when circuit complete thru other factors. This relay energizes or doesn't on 1st coin or replay played, and controls steps of red and yellow scores.
L1 S.P.D.T.	B-26	38-2 91-5 45-2	Yellow-Black Gray-Red Green-White	Directs circuit for yellow score step (6 to 8).
L2 N.C.	A-32	14-7 J	Red-Green Jumper	Opens circuit to coil.
L3 S.P.D.T.	B-26	45-2 51-9 27-5	Green-White White-Red Blue-Orange	Directs circuit for yellow score step (8 to 16).
L4 S.P.D.T.	B-29	45-2 48-5 38-2	Green-White Green-Black Yellow-Black	Directs circuit for red score step (6 to 8).
R1 S.P.D.T.	B-29	27-2 40-5 45-2	Blue-Orange Green Green-White	Directs circuit for red score step (8 to 16).
#16 SPOT RELAY COIL	A-34	J 70	Jumper Orange	Energized thru spotting disc when circuit complete thru other factors.
1 N.C.	B-34	90-4 J	Gray Jumper	Opens circuit to coil.
2 N.O.	L-42	54-1 30	White-Green Yellow	Lites number 16 lite in card, and sends a circuit to search disc to energize a search relay.
3 S.P.D.T.	J-32	63-6 45-6 51-6	Brown-Yellow Green-White White-Red	Directs circuits for energizing spinning mixer on or off relay for scores proportioning.
4 N.C.	K-26	75-5 80-8	Orange-White Black	Proportioning circuit for other game advantages.
5 N.O.	L-12	78-8 30	Orange-Black Yellow	Lites spot 16 feature lite.

CONTINUED ON NEXT PAGE

TRIP RELAY BANK CHART FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW ON PAGE 102

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
4 STARS RELAY COIL	A-34	J 70	Jumper Orange	Energized thru spotting disc when circuit complete thru other factors.
L1 N.C.	B-34	25-7 J	Blue-White Jumper	Opens circuit to coil.
L2 N.O.	L-11	21-11 30	Blue-Red Yellow	Lites 4 star feature lite.
L3 N.O.	H-16	45-11 71-3	Green-White Orange-Red	In series with red 5-in-line scoring circuit for 4 star scoring.
L4 S.P.D.T.	D-28	65-4 91-3 52-4	Brown-White Gray-Red White-Blue	Directs red or yellow score steps circuit thru mixer #3 disc.
R1 S.P.D.T.	D-28	13-8 93-3 56-7	Red-Yellow Gray-Yellow White-Brown	In series with circuit of switch L4 above.
R2 N.O.	D-17	75 90-8	Orange-White Gray	In series with red 5-in-line scoring circuit for 4 star scoring.
TILT RELAY COIL	A-11	14-5 70	Red-Green Orange	Energized by any cabinet tilt switch, also by coin switch if closed too long. (See explanation of anti-cheat coin switch in manual)
L1 N.C.	N-31	10 20-4	Red Blue	Opens 17 volt circuit.
L2 N.C.	G-2	30-P 60-P	Yellow (Plastic) Brown (Plastic)	Opens circuit to mixer-spotting unit motor.
L3 N.O.	B-4	13-16 83-3	Red-Yellow Black-Yellow	Completes a circuit to energize start relay if previous game was tilted during search cycle.
L4 N.O.	H-13	57-6 85-7	White-Orange Black-White	Completes a circuit to energize red button relay.
R1 N.C.	J-41	40-8 98-9	Green Gray-Black	Opens circuit to magic number buttons.
R2 N.O.	C-8	75-8 30	Orange-White Yellow	Completes a circuit to energize timer cams index coil if previous game was tilted during a spin.
R3 S.P.D.T.	K-8	21-3 30 45-8	Blue-Red Yellow Green-White	Opens game advantage, and playing circuits, and completes a circuit to close shutter if game is tilted when shutter is open.
R4 S.P.D.T.	N-29	38 54-2 91-2	Yellow-Black White-Green Gray-Red	Opens 6 volt circuit, and completes a circuit to lite tilt lite.
EXTRA-BALL #1 RELAY				Trips with extra-ball #2 relay.
L1 N.O.	L-29	21-4 50-9	Blue-Red White	Completes circuit to lite extra balls feature lite.
L2 S.P.D.T.	H-29	60-6 56-6 18-2	Brown White-Brown Red-Black	Opens score steps circuit, and completes circuit for extra ball steps.
L3 S.P.D.T.	J-29	80-8 15-7 36-5	Black Red-White Yellow-Brown	In series with circuit of switch L2 above.
R1 N.O.	E-24	85-4 91-11	Black-White Gray-Red	Opens circuit to energize anti-cheat relay.
R2 S.P.D.T.	E-23	85-4 30 61-2	Black-White Yellow Brown-Red	Opens guaranteed score step circuits, and completes guaranteed extra-ball steps.
R3 N.O.	E-9	71-8 83-1	Orange-Red Black-Yellow	In series with timer reset circuit when playing extra balls.

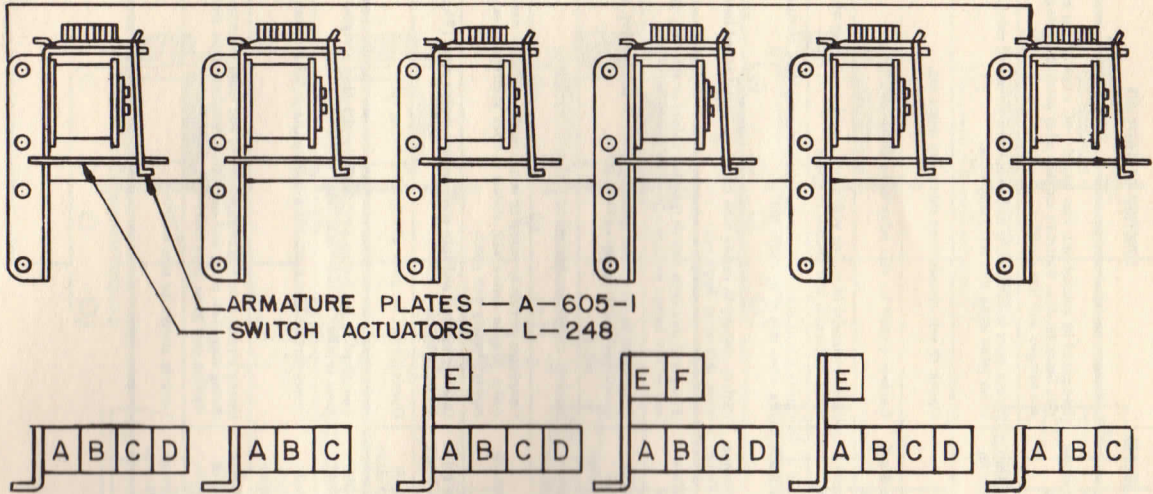
RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
EXTRA BALL #2 RELAY COIL	L1 N.C.	J 70	Jumper Orange	Energized by yellow button switch when playing for extra ball.
L2 N.O.	B-12	10-6 J	Red Jumper	Opens circuit to coil.
L3 S.P.D.T.	F-13	38-3 91-1	Yellow-Black Gray-Red	In series with circuit to run ball lifter motor to raise extra balls.
L4 N.C.	L-23	31-5 13-4 74	Yellow-Red Red-Yellow Orange-Green	Opens score lites flash circuit, and completes extra-ball lites flash circuit.
R1 N.C.	L-13	45-7 52-11	Green-White White-Blue	Opens other-game advantage lites flash circuit.
R2 S.P.D.T.	H-31	61-8 83-4	Brown-Red Black-Yellow	Opens circuit for other game advantages.
R3 N.O.	E-6	14-3 63-11 98-2	Red-Green Brown-Yellow Gray-Black	Directs circuits for opening shutter and energizing timer cams index, and mixer latch coils.
RED ROLL-OVER RELAY COIL	H-29	54-8 56-6	White-Green White-Brown	In series with extra ball steps circuit.
L1 N.C.	A-36	J 70	Jumper Orange	Energized thru spotting disc when circuit complete thru other factors.
L2 N.O.	B-36	25-13 J	Blue-White Jumper	Opens circuit to coil.
L3 N.O.	D-35	61-9 98-6	Brown-Red Gray-Black	In series with circuit to energize select after 5th trip relay thru red panel roll-over button switch.
R1 N.C.	L-9	60-12 80-9	Brown Black	Completes circuit to lite red roll-over lites on backglass, and panel.
R2 N.C.	H-25	48-9 51-11	Green-Black White-Red	Scores, and extra ball's proportioning circuit thru mixer #2 disc.
YELLOW ROLL-OVER RELAY COIL	H-33	43-4 57-8	Green-Yellow White-Orange	Other game advantages proportioning circuit thru mixer #3 disc.
L1 N.C.	A-36	J 70	Jumper Orange	Energized thru spotting disc when circuit complete thru other factors.
L2 N.O.	B-36	38-13 J	Yellow-Black Jumper	Opens circuit to coil.
L3 N.O.	D-35	14-4 25-12	Red-Green White-White	In series with circuit to energize select before 5th trip relay thru yellow panel rollover button switch.
R1 N.C.	L-8	56-12 80-9	White-Brown Black	Completes circuit to lite yellow roll-over lite on backglass and panel.
R2 N.C.	H-25	48-9 65-8	Green-Black Brown-White	Scores, and extra-balls proportioning thru mixer #2 disc.
BEFORE 4TH SELECTOR LOCK RELAY COIL	H-33	57-8 93-4	White-Orange Gray-Yellow	Other game advantages proportioning circuit thru mixer #3 disc.
1 N.C.	A-11	J 70	Jumper Orange	Energized thru timer disc when 4th ball is shot.
2 N.O.	B-11	83-6 J	Black-Yellow Jumper	Opens circuit to coil.
3 S.P.D.T.	F-8	36-2 43-2	Yellow-Brown Green-Yellow	In series with circuit to step timer unit from 4th to 5th step.
4 N.C.	L-1	15-11 98-9 53-18 10-5 27-4	Red-White Gray-Black White-Yellow Red Blue-Orange	Directs circuit from magic-number buttons, to (R) collect scores button. In series with circuit to flash select-now lite before 4th ball.

TRIP RELAY BANK CHART FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW ON PAGE 102

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
BEFORE 5th SELECTOR LOCK RELAY COIL	A-11	J 70	Jumpers Orange	Energized thru timer disc when 5th ball is shot.
L1	N.C.	B-11 74-6 J	Orange-Green	Opens circuit to coil.
L2	N.O.	H-9 54-11 71-8	White-Yellow Orange-Red	In series with timer reset circuit thru (R) collect scores button switch.
L3	S.P.D.T.	N-1 98-3 14-1 75-3	Gray-Black Red-Green Orange-White	Directs circuits to flash select-now lite before 4th, before 5th, and after 5th ball.
L4	N.C.	C-35 31-11 25-12	Yellow-Red Blue-White	Opens circuit to energize select before 5th trip relay thru yellow roll-over panel button switch.
L5	N.O.	D-12 10-6 25-8	Red Blue-White	In series with extra ball trip relay circuit when playing extra-balls.
R1	N.C.	I-41 15-14 45-5	Red-White Green-White	Opens circuit to magic-number buttons.
R2	N.C.	M-9 52-12 56-12	White-Blue White-Brown	Opens circuit to yellow panel roll-over lite.
R3	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.
R4	N.O.	F-5 18-6 50-2	Red-Black White	In series with circuit to energize start relay when playing extra balls.
AFTER 5th SELECTOR LOCK RELAY COIL	A-10	J 70	Jumpers Orange	Energized when 6th ball (1st extra-ball) is shot.
L1	N.C.	B-10 98-11 J	Gray-Black	Opens circuit to coil.
L2	N.C.	M-9 41-8 60-12	Green-Red Brown	Opens circuit to red panel roll-over lite.
L3	N.C.	C-35 18-11 61-9	Red-Black Brown-Red	Opens circuit to energize select after 5th trip relay thru red roll-over panel button switch.
R1	N.C.	L-2 75-3 78-2	Orange-White Orange-Black	In series with circuit to flash select now lite after 5th ball.
R2	N.C.	H-41 27-10 91-6	Blue-Orange Gray-Red	Opens circuit to magic number buttons.

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
SELECT BEFORE 5th RELAY COIL	A-35	25-11 70	Blue-White Orange	Energized thru spotting disc when circuit complete thru other factors. Also energized by yellow rollover button switch when yellow rollover relay is tripped.
L1	N.C.	B-35 25-11 31-11	Blue-White Yellow-Red	Opens circuit to coil.
L2	N.O.	I-41 15-11 98-9	Red-White Gray-Black	In series with circuit to magic-number buttons.
L3	S.P.D.T.	L-9 57-5 50-5 74-8	White-Orange White Orange-Green	Directs circuit for select before 4th ball feature lite or select before 5th ball feature lite.
L4	N.C.	G-32 36-4 43-4	Yellow-Brown Green-Yellow	Other game advantages proportioning circuit thru mixer #3 disc.
R1	N.C.	I-23 14-9	Red-Green White-Brown	Scores and extra-balls proportioning circuit thru mixer #2 disc.
R2	S.P.D.T.	L-1 10-5 53-2 23-5	Red White-Yellow Blue-Yellow	Directs circuit for flashing select-now lite before 4th ball or before 5th ball.
SELECT AFTER 5th RELAY COIL	A-35	61-11 70	Brown-Red Orange	Energized thru spotting disc when circuit complete thru other factors. Also energized by red rollover button switch when red rollover relay is tripped.
L1	N.C.	C-35 18-11 61-11	Red-Black Brown-Red	Opens circuit to coil.
L2	N.C.	I-22 21-3 56-8	Blue-Red White-Brown	Scores and extra-balls proportioning circuit thru mixer #2 disc.
L3	S.P.D.T.	L-9 50-5 80-9 85-8	White Black Black-White	Directs circuit for select before 4th, select before 5th, or select after 5th feature lite.
L4	N.C.	F-32 27-12 10-8	Blue-Orange Red	Other game advantages proportioning circuit thru mixer #3 disc.
R1	N.C.	H-25 40-9 65-8	Green Brown-White	Scores and extra-ball proportioning circuit thru mixer #2.
R2	S.P.D.T.	L-1 53-2 90 78-2	White-Yellow Gray Orange-Black	Directs circuit for flashing select-now lite before 4th, before 5th, or after 5th ball.
R3	N.O.	I-42 45-5 98-9	Green-White Gray-Black	In series with circuit to magic-number buttons.

6 RELAY BANK PICTORIAL VIEW LETTERS CORRESPOND TO SWITCH CHART ON PAGE 106



NAME	SPINNING MIXER OFF RE.	SPINNING MIXER ON 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 EQUIVALANT, NO WRAP ON COIL.	THERMALEZE WIRE OR EQUIVALANT, NO WRAP ON COIL.		THERMALEZE WIRE OR EQUIVALANT, NO WRAP ON COIL.		THERMALEZE WIRE OR EQUIVALANT, NO WRAP ON COIL.

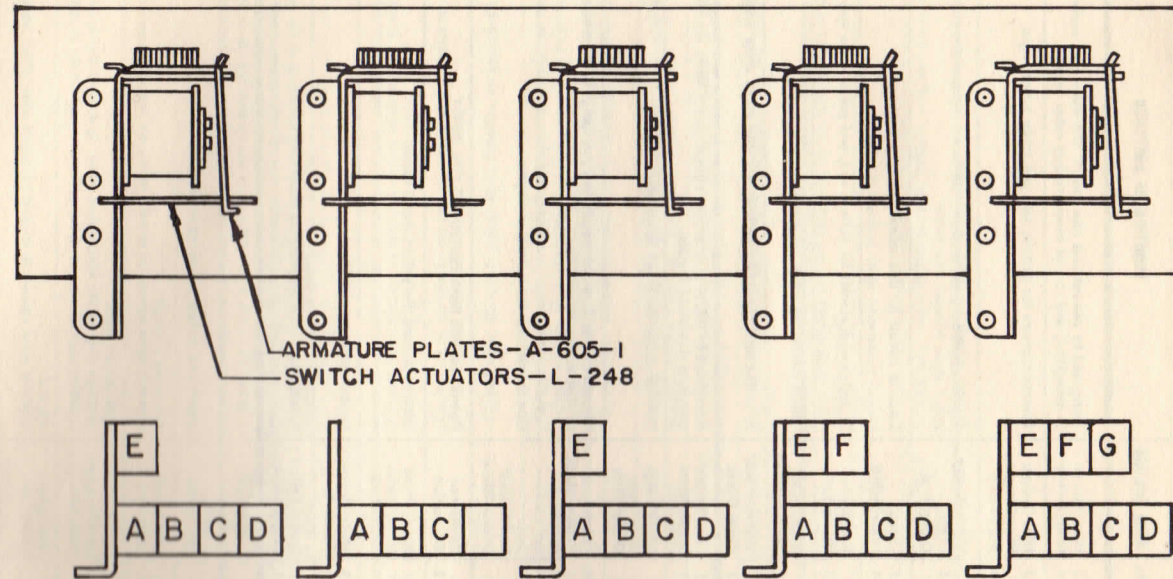
SPRING CODE		
COLOR	PART NO.	LOAD
CLEAR	SP-199-13	13 OZ AT 15/16
BLUE	SP-199-14	21 OZ AT 15/16
YELLOW	SP-199-15	15 OZ AT 15/16
RED	SP-199-16	9 OZ AT 15/16
GREEN	SP-199-17	17 OZ AT 15/16

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
SPINNING MIXER-OFF RELAY COIL	A-38	31-7 70	Yellow-Red Orange	Energized during spin thru red, yellow or green score disc when circuit complete thru other factors. Either this relay or spinning mixer-on relay is energized during each spin.
A N.O.	C-38	50-8 52-8	White White-Blue	Lock-in circuit for this relay.
B N.O.	B-8	75-8 30	Orange-White Yellow	In series with circuit to timer cams index coil to complete timer cams cycle.
C N.C.	B-37	48-8 48-8	Green-Black Green-Black	Opens circuit to spinning mixer-on relay.
D N.C.	J-30	36-5 51-5	Yellow-Brown White-Red	Opens circuit for game advantages.
SPINNING MIXER-ON RELAY COIL	A-37	48-8 70	Green-Black Orange	Energized during spin thru spinning mixer disc when circuit complete thru other factors. Either this relay or spinning mixer-off relay is energized during each spin.
A N.O.	B-8	75-8 30	Orange-White Yellow	In series with circuit to timer cams index coil to complete timer cams cycle.
B N.O.	C-37	48-8 52-8	Green-Black White-Blue	Lock-in circuit for this relay.
C N.C.	B-38	31-7 50-8	Yellow-Red White	Opens circuit to spinning mixer-off relay.
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-3	90-5 41-6 53-7	Gray Green-Red White-Yellow	Directs replay register unit reset circuit.
B N.O.	G-1	20P 60P	Blue(Plastic) Brown(Plastic)	Completes a circuit to control unit, and mixer-spotting unit motors.
C N.O.	H-3	56-2 75-2	White-Brown Orange-White	Lock-in circuit for this relay.
D N.C.	C-5	13-9 83-3	Red-Yellow Black-Yellow	Opens start relay circuit.

RELAY SWITCH	LOCATION 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. Switches on this relay protect scoring, game advantages and lite circuits.
A S.P.D.T.	G-5	75-2 56-2 50-2	Orange-White White-Brown White	Opens start relay circuit, and completes circuit to energize replay reset relay when this relay drops out.
B N.O.	N-31	20-4 80-1	Blue Black	Opens 17 volt circuit when this relay drops out.
C N.O.	F-25	78-4 30	Orange-Black Yellow	Lock-in circuit for this relay when energized.
D N.C.	J-7	14-14 30	Red-Green Yellow	(Safety circuit) In series with circuit to close shutter when this relay drops out, and shutter is open.
E S.P.D.T.	N-28	91-2 38 40	Gray-Red Yellow-Black Green	Opens 6 volt circuit to score lites, and completes circuit to tilt lite when this relay drops out.
F N.C.	G-12	57-6 85-7	White-Orange Black-White	(Safety circuit) In series with circuit to energize red button relay when this relay drops out.
START RELAY COIL	A-5	13-16 70	Red-Yellow Orange	Energized thru coin switch (playing coins) or thru red, green, blue and yellow button switches (playing replays).
A S.P.D.T.	H-38	52-8 21-3 53-8	White-Blue Blue-Red White-Yellow	Opens lock-in circuit for spinning mixer-on or off relay, and completes circuit to run variator motor.
B N.O.	I-5	13-16 48-2	Red-Yellow Green-Black	Lock-in circuit for this relay.
C N.O.	I-6	10-10 48-2	Red Green-Black	Completes circuit to energize mixer latch, and timer cams index coils. Also in series with circuit to open shutter on 1st coin or replay starting new game.
D N.C.	C-22	75-4 78	Orange-White Orange-Black	Opens extra-ball multiple steps circuit during spin. (When playing for extra-balls)
E N.C.	H-31	18-7 83-4	Red-Black Black-Yellow	Opens circuit for game advantages during spin.
RED BUTTON RELAY COIL	B-12	85-7 91-8	Black-White Gray-Red	Energized by red button switch. (Play all) 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	Direct circuit from extra-balls feature lite to all features lite.
B S.P.D.T.	C-6	93-2 98-2 14-3	Gray-Yellow Gray-Black Red-Green	Opens 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.
C N.O.	F-12	27-8 57-6	Blue-Orange White-Orange	Lock-in circuit for this relay.

5 RELAY BANK PICTORIAL VIEW

LETTERS CORRESPOND TO SWITCH CHART ON PAGE 108



Name	GREEN 6 RE.	FEATURES LOCK RE.	PLAY FEATURES RE.	SCORES LOCK RE.	PLAY SCORES RE.
Coil turns & wire gauge	2300 # 33	2300 # 33	2300 # 33	1800 # 33	1800 # 33
Coil resistance (nominal)	85 Ω	85 Ω	85 Ω	65 Ω	65 Ω
Operating voltage	50 V.	50 V.	50 V.	50 V.	50 V.
Test voltage	38 V.	37 V.	37 V.	37 V.	37 V.
Extension spring load	CLEAR	CLEAR	YELLOW	YELLOW	YELLOW
Sw actuator stroke	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.

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

5 RELAY BANK SWITCH CHART

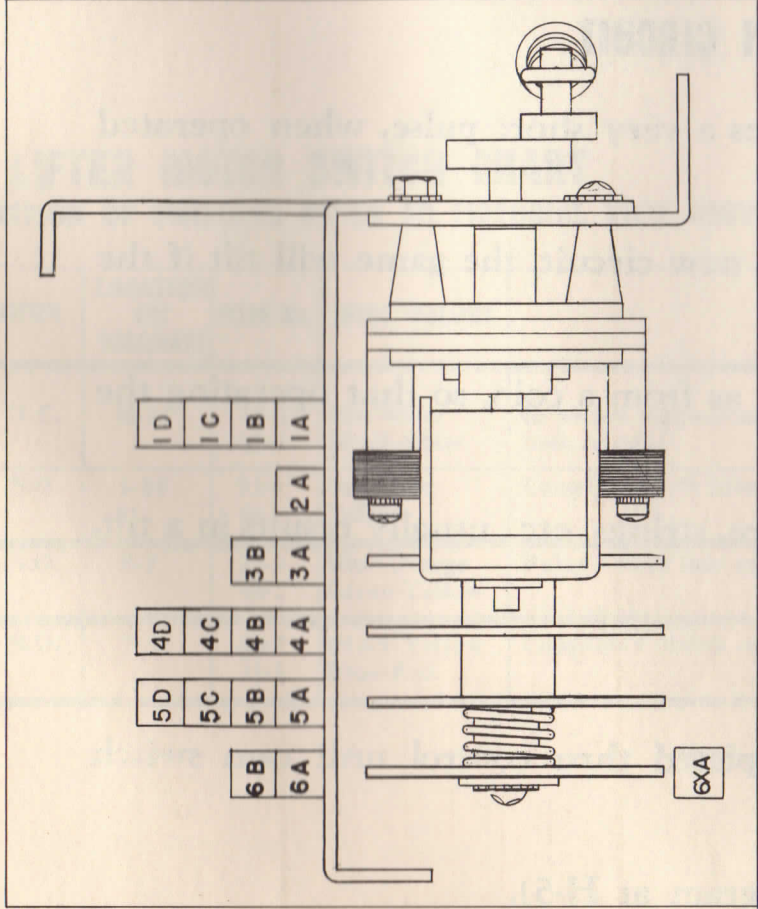
FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW ON PAGE 107

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
GREEN 6 RELAY COIL	B-25	13-3 71-13	Red-Yellow Orange-Red	Energized thru green score disc when circuit complete thru other factors. Switches on this relay control circuits for red, and yellow score steps when playing for scores only or scores and features.
A S.P.D.T.	C-26	45-2 38-9 53-6	Green-White Yellow-Black White-Yellow	Directs circuits for yellow score steps.
B S.P.D.T.	D-29	45-2 63-4 53-6	Green-White Brown-Yellow White-Yellow	Directs circuits for red score steps.
C N.O.	C-26	45-2 53-6	Green-White White-Yellow	In series with circuit for yellow, and red score steps.
D N.O.	D-26	18-4 25-6	Red-Black Blue-White	In series with circuit thru mixer #2 disc for yellow, red, and green score steps.
E N.O.	B-26	27-5 93-11	Blue-Orange Gray-Yellow	In series with circuit for yellow, and red score steps.
FEATURES LOCK RELAY COIL	B-44	23-11 53-14	Blue-Yellow White-Yellow	Energized by control unit cam switch #7B when play features relay is energized, and circuit complete thru other factors.
A N.O.	D-44	40-15 53-14	Green White-Yellow	Lock-in circuit for this relay.
B N.O.	E-33	45-9 90-6	Green-White Gray	In series with circuit for all game advantages.
C N.O.	F-31	13-7 60-14	Red-Yellow Brown	In series with circuit for magic-numbers feature unit steps.
PLAY FEATURES RELAY COIL	B-46	23-11 61-13	Blue-Yellow Brown-Red	Energized by (green) play features button switch when circuit complete thru other factors.
A N.O.	C-46	61-13 81-13	Brown-Red Black-Red	Lock-in circuit for this relay.
B N.O.	E-44	43-14 53-14	Green-Yellow White-Yellow	Completes circuit to energize features lock relay.
C N.C.	A-31	71-13 80-15	Orange-Red Black	Opens yellow, red, and green score unit step-up circuit.
D N.C.	L-23	31-5 54	Yellow-Red White-Green	Opens yellow, red, and green score lites flash circuit.
E S.P.D.T.	K-3	38-11 30 23-15	Yellow-Black Yellow Blue-Yellow	Directs circuit from extra ball, all features, and play scores feature lites to play features lite.

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
SCORES LOCK RELAY COIL	B-45	23-11 93-14	Blue-Yellow Gray-Yellow	Energized by control unit cam switch #7B when play scores relay is energized, and circuit complete thru other factors.
A S.P.D.T.	F-29	23-12 27-5 61-10 Brown-Red	Blue-Yellow Blue-Orange Brown-Red	Directs circuits for yellow, red, and green score steps.
B S.P.D.T.	G-31	57-9 40-11 61-9	White-Orange Green Brown-Red	Directs circuit for green score steps.
C N.O.	D-45	40-15 93-14	Green Gray-Yellow	Lock-in circuit for this relay.
D N.O.	F-29	14-6 63-12	Red-Green Brown-Yellow	In series with circuit for yellow, red, and green score steps.
E N.C.	H-32	18-7 36-4	Red-Black Yellow-Brown	Opens circuit for game advantages.
F N.O.	F-29	38-5 56-11	Yellow-Black White-Brown	In series with circuit for yellow, red, and green score steps.
PLAY SCORES RELAY COIL	B-47	23-11 65-15	Blue-Yellow Brown-White	Energized by (blue) play scores button switch when circuit complete thru other factors.
A S.P.D.T.	C-31	27-5 25-5 45-2	Blue-Orange Blue-White Green-White	Directs circuit for green score step.
B S.P.D.T.	L-3	51-15 38-11 21-15	White-Red Yellow-Black Blue-Red	Directs circuit from extra-ball's feature, and play-all feature lites to play scores feature lite.
C S.P.D.T.	B-30	10-4 13-8 75-6	Red Red-Yellow Orange-White	Directs circuits for red score steps.
D N.C.	L-12	14-8 52-11	Red-Green White-Blue	Opens features flash circuit.
E S.P.D.T.	B-27	85-11 56-7 98-5	Black-White White-Brown Gray-Black	Directs circuits for yellow score steps.
F N.O.	C-47	57-13 65-15	White-Orange Brown-White	Lock-in circuit for this relay.
G N.O.	D-45	43-14 93-14	Green-Yellow Gray-Yellow	Completes circuit to energize scores lock relay.

SHUTTER MOTOR PICTORIAL VIEW

LETTERS CORRESPOND TO SWITCH CHART AT RIGHT



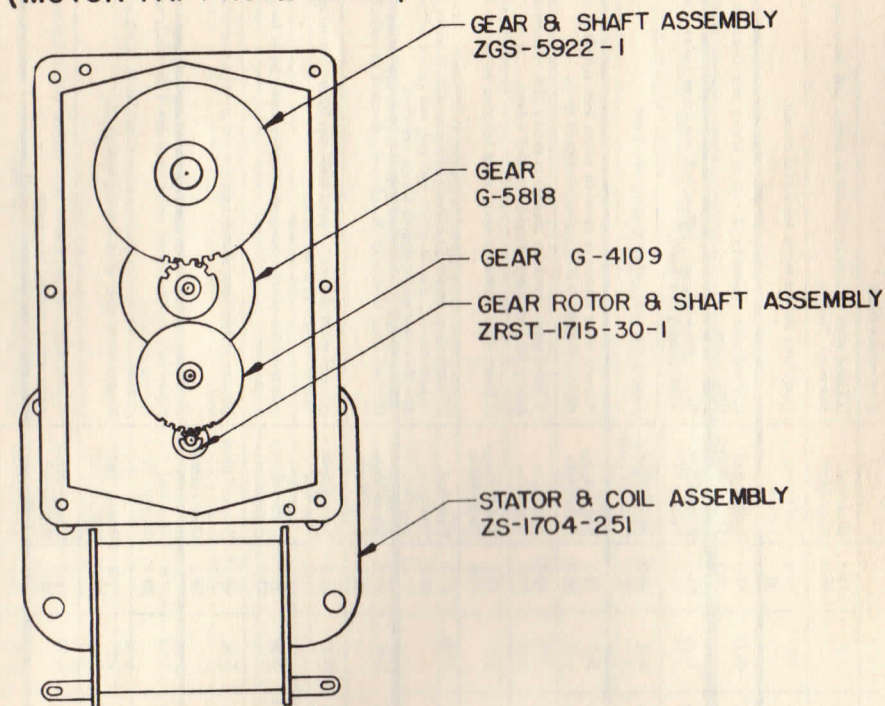
SHUTTER MOTOR CAM SWITCH CHART

FOR POSITION OF SWITCHES SEE PICTORIAL VIEW AT LEFT

CAM SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
1A	N.C.	14 21-3	Red-Green Blue-Red	(Closed when shutter is closed) in series with replay scoring circuit.
1B	N.O.	21-3 75-13	Blue-Red Orange-White	(Closed when shutter is open) in series with circuit to energize features lock relay, scores lock relay, play features relay, and play scores relay.
1C	N.C.	21-3 98-8	Blue-Red Gray-Black	(Closed when shutter is closed) in series with timer unit step-up, and reset circuits.
1D	N.O.	14-3 30	Red-Green Yellow	Completes shutter motor carry-over circuit.
2A	N.C.	11-3 36-3	Yellow-Red Yellow-Brown	(Closed when shutter is closed) in series with circuit to run ball lifter motor.
3A	N.O.	85-5 30	Black-White Yellow	Resets extra-ball unit, yellow, red, and green replay counter units, when starting new game.
3B	N.O.	20-P 70-P	Blue (Plastic) Orange (Plastic)	Resets trip bank, when starting new game.
4A	N.O.	14-3 18-3	Red-Green Red-Black	(Closed when shutter is open) in series with circuit to close shutter if game is tilted when shutter is open.
4B	N.C.	10-13 40-8	Red Green	(Closed when shutter is 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 is open) same function as switch 4A.
4D	N.C.	21-3 40-8	Blue-Red Green	(Closed when shutter is closed) in series with selector lock relays circuit, also in series with red, and yellow rollover switches, and magic number button switches.
5A	N.C.	65-2 98-8	Brown-White Gray-Black	(Closed when shutter is closed) same function as switch 1C.
5B	N.O.	31-4 91-4	Yellow-Red Gray-Red	(Closed when shutter is open) drops out lifter start relay when shutter closes. (1st ball is shot)
5C	N.O.	36-5 61-8	Yellow-Brown Brown-Red	(Closed when shutter is open) in series with circuit for game advantages.
5D	S.P.D.T.	63-11 10-10 93-2	Brown-Yellow Red Gray-Yellow	Directs circuit from shutter motor to timer cams, and mixer latch coils.
6A	N.C.	91-8 70	Gray-Red Orange	(Open only during shutter cycle) in series with circuit to energize red button relay.
6B	N.O.	1-9 30	Orange-Red Yellow	Resets timer unit, when starting new game.
6B	N.O.	78-3 30	Orange-Black Yellow	Resets magic-number feature unit, yellow, red, and green score units, when starting new game.

SHUTTER MOTOR

(MOTOR PART NO. E-119-99)



NOTE:

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

NEW ANTI-CHEAT COIN SWITCH CIRCUIT

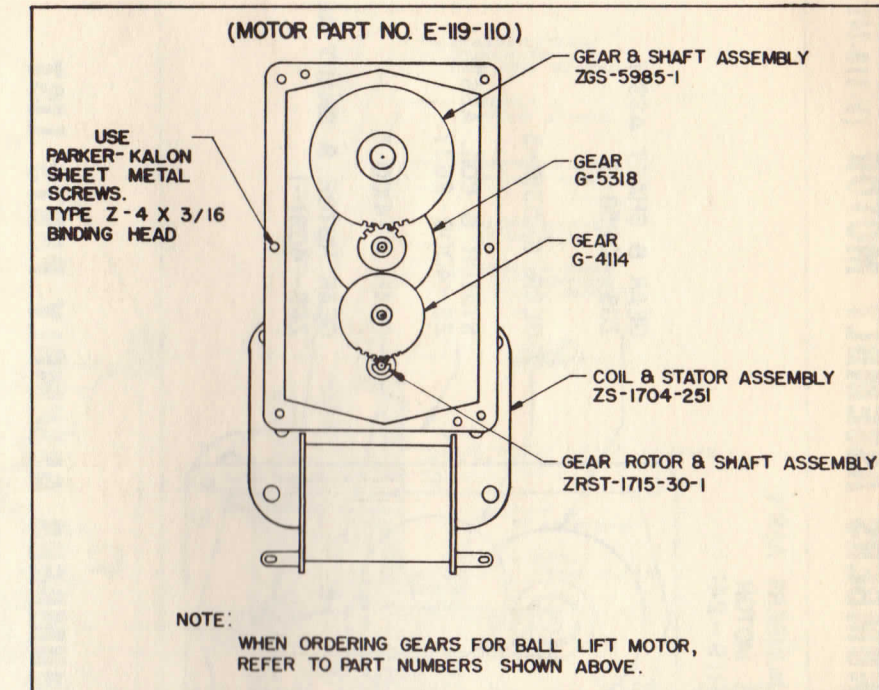
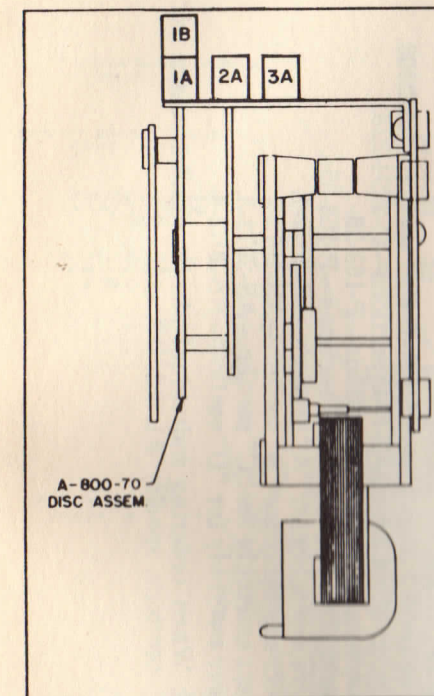
The coin switch gives a very short pulse, when operated by a coin. With this new circuit, the game will tilt if the pulse is not as short as from a coin, so that operating the coin switch with wire, strings, etc., usually results in a tilt.

The circuit is completed thru control unit cam switch

#4D (on wiring diagram at H-5).

BALL LIFTER MOTOR PICTORIAL VIEW

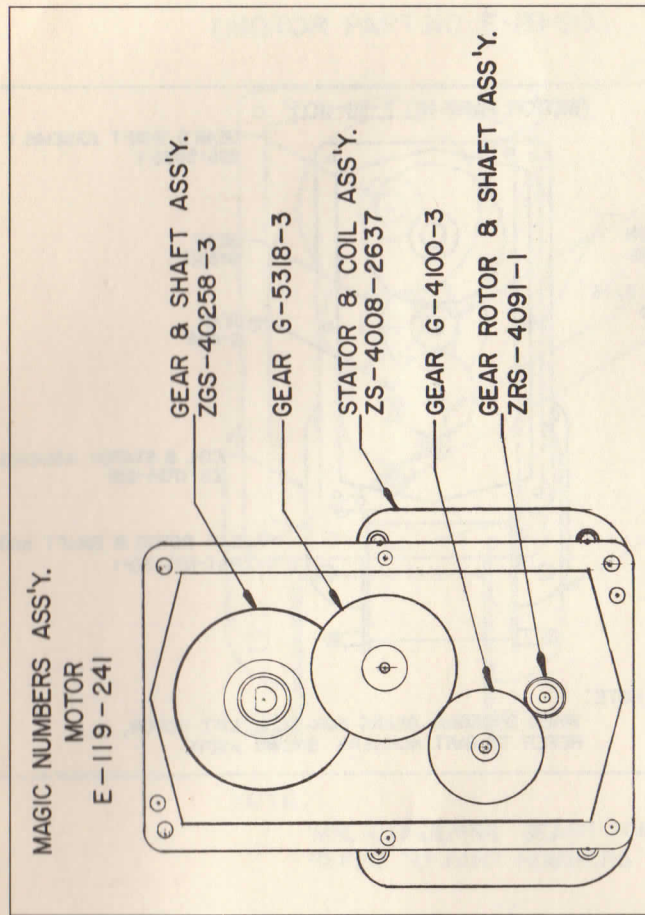
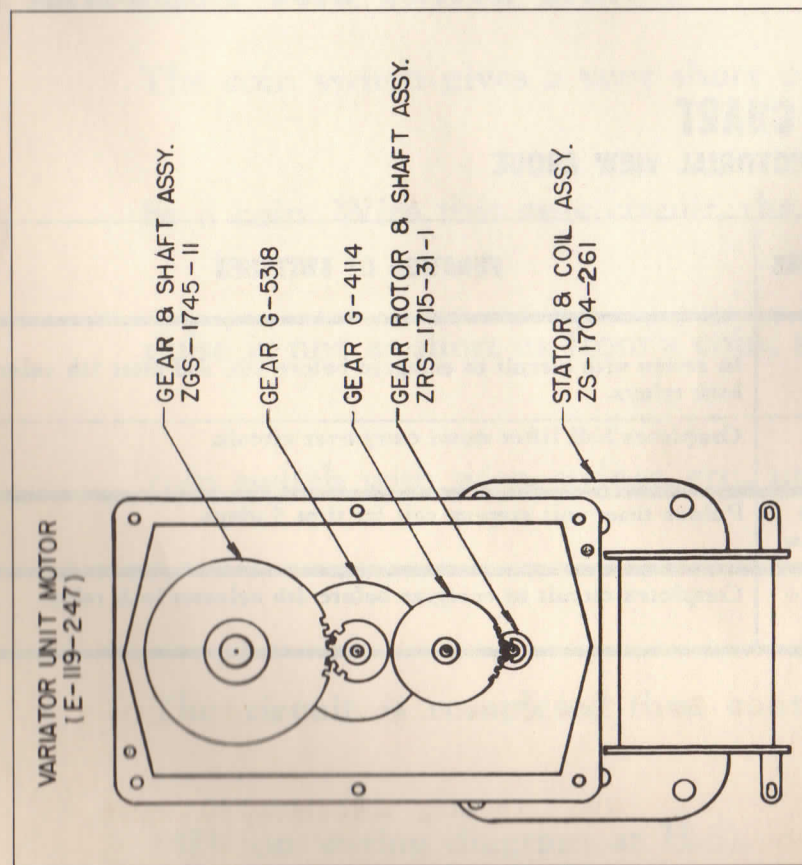
NUMBERS CORRESPOND TO SWITCH CHART BELOW



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.

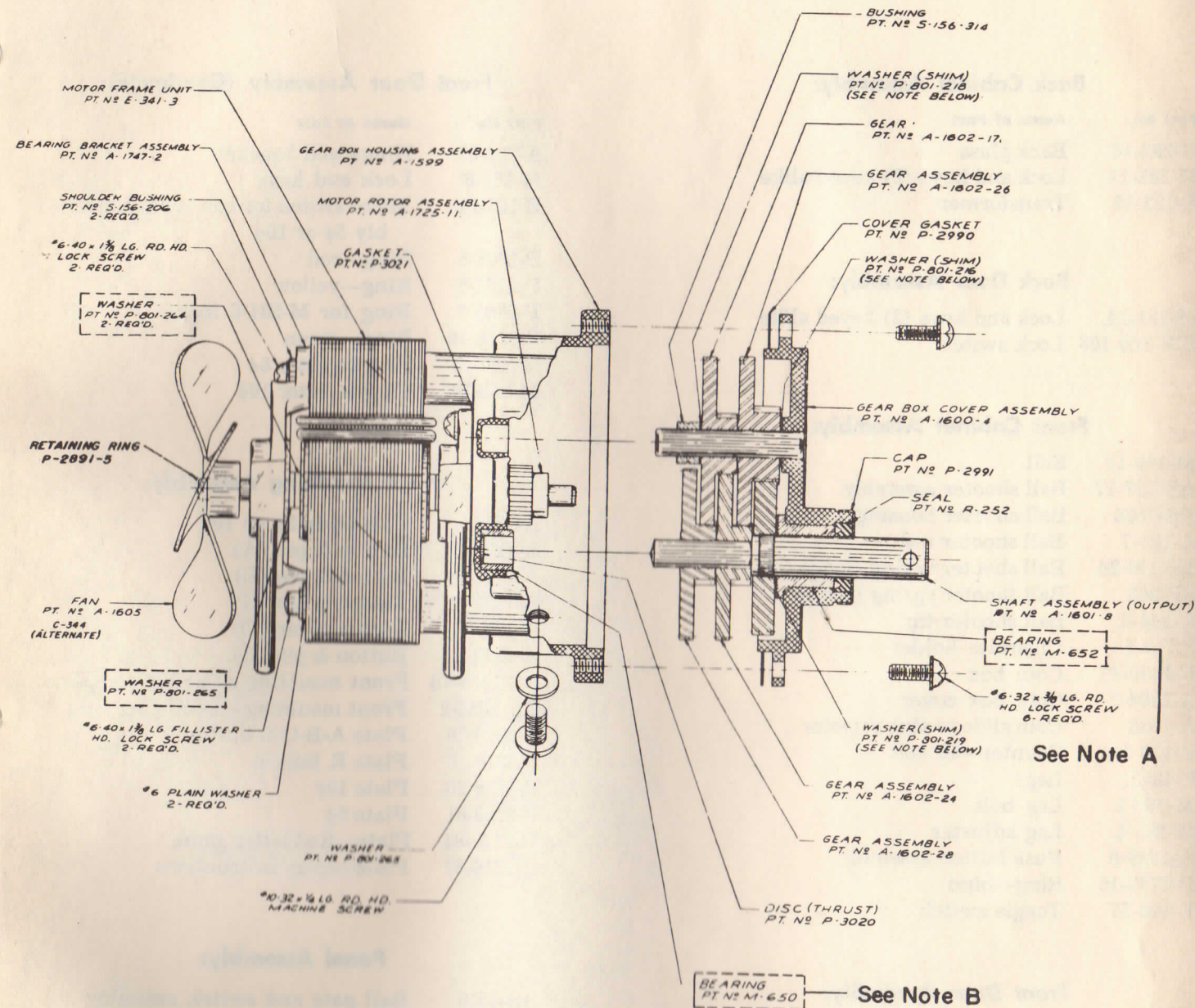


MAGIC NUMBERS ASSEMBLY PARTS LIST

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.

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



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.

MISCELLANEOUS PARTS

Back Cabinet Assembly:

Part No.	Name of Part
G-292-10	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
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
A-1533	Coin slide to slug rejector
E-130-10	Counter—48 volt
P-4052	Legs
M-106-1	Leg bolt
M-163-4	Leg adjuster
A-1729-6	Push button assembly
P-2768-15	Ring—blue
E-108-57	Toggle switch

Front Door Assembly:

A-1538-3	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-567-113	Front door only
AS-2041-2	Front door assembly complete Specify 5¢ or 10¢

Front Door Assembly (Continued):

Part No.	Name of Part
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-2768-16	Ring—green
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 & pin (A)
A-1272-24	Button & pin (B)
A-1272-25	Button & pin (C)
A-1272-26	Button & pin (D)
A-1272-29	Button & pin (R)
AS-1305-16	Front moulding assembly complete
CA-1058-2	Front moulding—wood part only
P-2210-36	Plate A-B-C-D button
P-2210-38	Plate R. button
P-2210-80	Plate 10¢
P-2210-81	Plate 5¢
P-2210-84	Plate—Red letter game
P-2210-85	Plate replay instructions

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.