

Bally® GAYETY

OPERATING INSTRUCTIONS AND PARTS CATALOG

Part Numbers are marked on illustrations

FOR QUICKEST SERVICE STATE CORRECT PART NUMBER WHEN ORDERING PARTS

MISCELLANEOUS PARTS

Back Cabinet Assembly:

Part No.

G-242	Back glass
M-281-14	Lock & Keys (2) Keyed alike
E-122-19	Transformer

Back Cabinet Insert Assembly:

A-1739-6	Arm—Short—for plastic numbered strip
A-1739-7	Arm—Long—for plastic numbered strip
M-695-6	Plastic numbered strip #1 is on left—facing Lite Box
M-695-7	Plastic numbered strip #2
M-695-8	Plastic numbered strip #3
M-696-1	Plastic numbered strip #4
M-696-3	Plastic numbered strip #5
M-412-2	Wire wiper for Slip Ring and Wiper assembly

Back Door Assembly:

M-281-12	Lock and Keys (2) Keyed alike
E-300-63	Search Relay Bank Complete
E-269	Selenium Rectifier

Front Cabinet Assembly:

M-168-15	Ball 1 1/8"
AS-187-12	Ball shooter assembly
A-1540	Ball shooter housing
A-100-7	Ball shooter rod
SP-200-24	Ball shooter spring (long)
SP-237	Ball shooter spring (short)
R-108-3	Ball shooter tip
A-429-14	Ball trough only to ball lifter assembly
P-1900-18	Cash box
E-130-8	Counter—48 Volt
CA-350-1	Leg
M-163-4	Leg Adjuster
M-106	Leg Bolt
M-310-2	Leg Anti Split bolt
M-497	Wire (long) for A-429-14 Ball Trough
M-497-1	Wire (short) for A-429-14 Ball Trough

Front Door Assembly:

Part No.

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-277-26	Coin Switch assembly Complete 5¢
AS-277-27	Coin Switch assembly Complete 10¢
CA-567-19	Front door only
AS-1451	Front door Complete 5¢
AS-1451-1	Front door Complete 10¢
A-254-33	Hinge and bracket
M-281-6	Lock and keys
E-108-32	Micro switch—Coin switch assembly 5 or 10¢ play
P-2768-5	Ring—Red—for A-1729-4 button
P-2768-6	Ring—Yellow—for A-1729-4 button
M-280-15	Slug rejector 5¢
M-280-16	Slug rejector 10¢

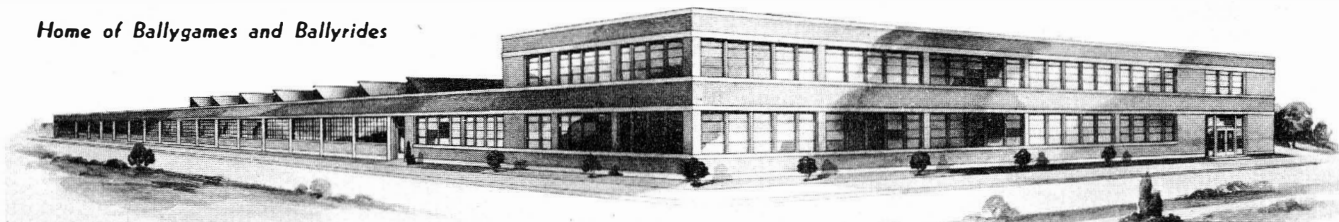
Front Moulding Assembly:

A-1272-11	Button and Pin—Right
A-1272-12	Button and Pin—Left
W-597	Contact plate for Triple Selector assembly
AS-1305-5	Front Moulding Complete
CA-735-2	Front Moulding only
A-1704-3	Knob and shaft—Triple selector assembly
P-2210-8	Plate—Coin entry—5¢
P-2210-9	Plate—Coin entry—10¢
P-2210-31	Plate—Triple Selector assembly
P-2210-33	Plate—Left and right button
A-1707-1	Wiper assembly—Triple selector assembly

Panel Assembly Top:

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
SW-101-26	Switch for AS-1315

Home of Ballygames and Ballyrides



50VOLT

30

TO SHUTTER MOTOR CAM SW #4C

SHUTTER MOTOR CAM SW #6B

C.U. CAM SW #5A

SHUTTER MOTOR CAM SW #5B

TILT RE.

21-3

TIMER DISC

65-2

C.U. CAM SW #1A

36-10

DRAG ARM SW.

71-9

76-6

SEL. LOCK TRIP RE.

27-2

C.U. CAM #14 B

90-9

TO SHUTTER MOTOR CAM SW #4A

BALL LIFTER CAM SW.

5

4

3

2

1

0

18-3

70

TIMER RESET COIL

TIMER STEP UP COIL

Closes at 39th step and tilts game
On Diag. F-13

On Diag. A-9
28 R 15

RESISTANCE OHMS
SPOOL SIZE
WIRE GAUGE

On Diag. A-10
E-184-43

Ratchet A-463-98

Plunger A-316-8

Step Up arm A-344-9

26 H 8

RESISTANCE OHMS
SPOOL SIZE
WIRE GAUGE

272

39 step unit. Wipers shown in zero or reset position

Completes circuit to ball lift motor at 1st step of unit to 39th step when 8th ball trough switch opens Diag - E - 13

Completes circuit to Left & Right Magic
Pocket move buttons at 4th step of
this unit Diag-G-31

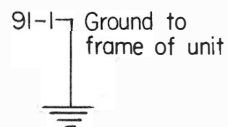
Completes circuit to "Turn Knobs" & "Press Button Now" lites at 4th step of this unit
Diag-J-5

Completes circuit for 4 steps to this unit for ball count. Diag - H-10

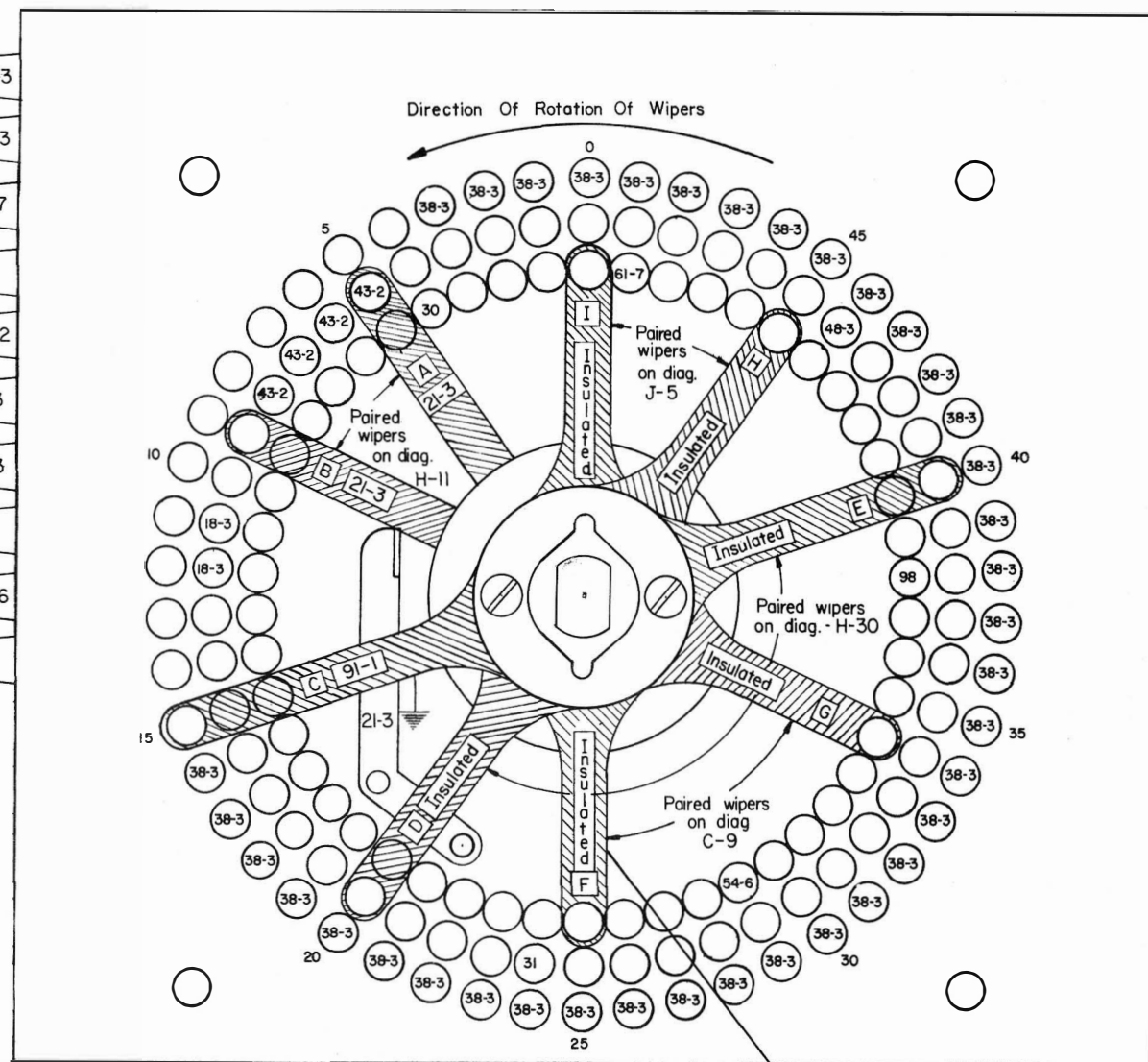
Completes circuit to shutter motor cam switch
*4B and then to shutter motor. Shutter will
close at 2nd step of this unit. Diag-H-10

Feeds the above two circuits Diag—H—10

To normally closed switch on Selector Lock trip coil. These two wires are shorted by wipers **F** & **G** at 4th step of this unit. Diag—B—9



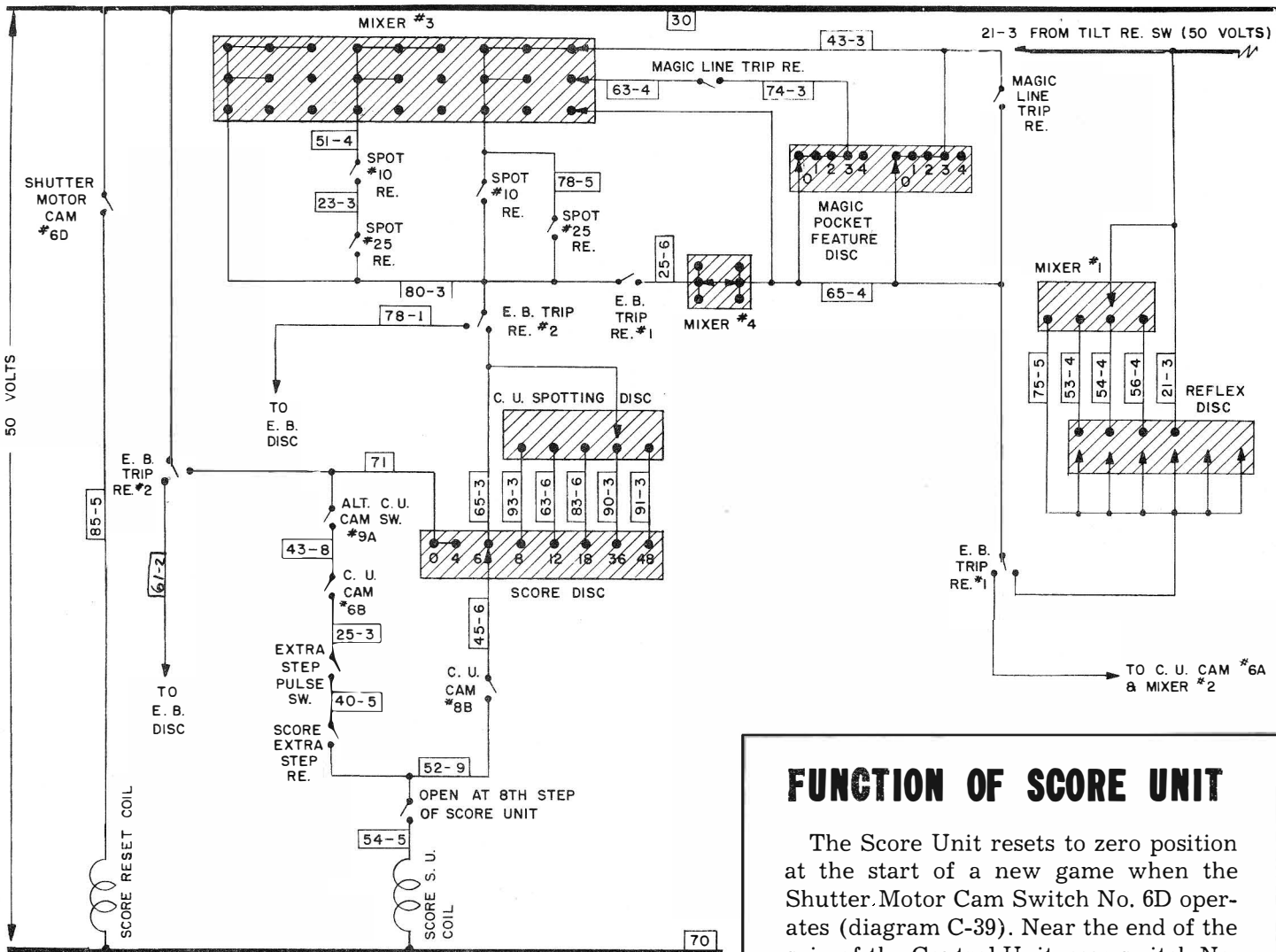
Note: Diag-E-13 etc.
refers to location
on schematic diagram



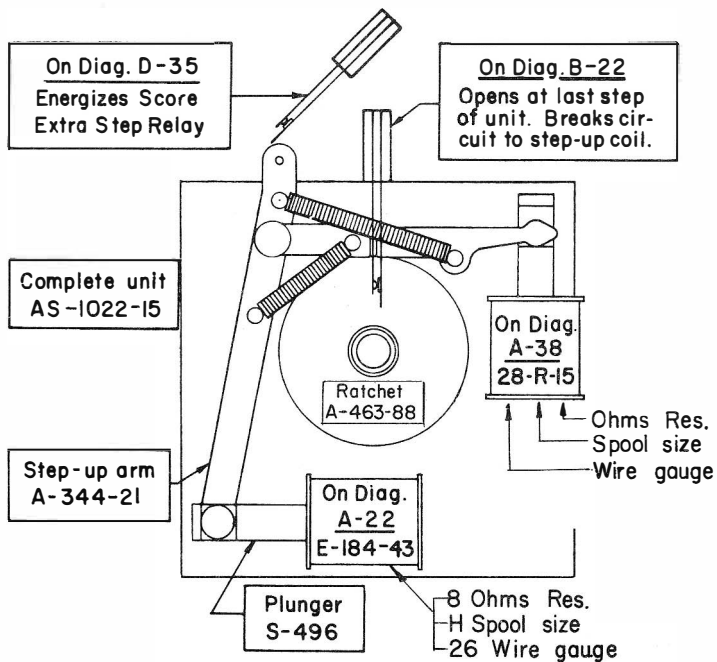
Disc (wired)
W-612

Wiper Assembly
AS-1046-95a

SCORE UNIT STEP-UP AND RESET CIRCUIT



SCORE UNIT viewed from COIL side



FUNCTION OF SCORE UNIT

The Score Unit resets to zero position at the start of a new game when the Shutter.Motor Cam Switch No. 6D operates (diagram C-39). Near the end of the spin of the Control Unit, cam switch No. 7A closes and steps unit to 1st position (diagram D-22), also see wiper marked "step circuit" on next page. When another play is made the unit will step again to its 2nd position. In other words the first two steps operate on successive spins of control unit.

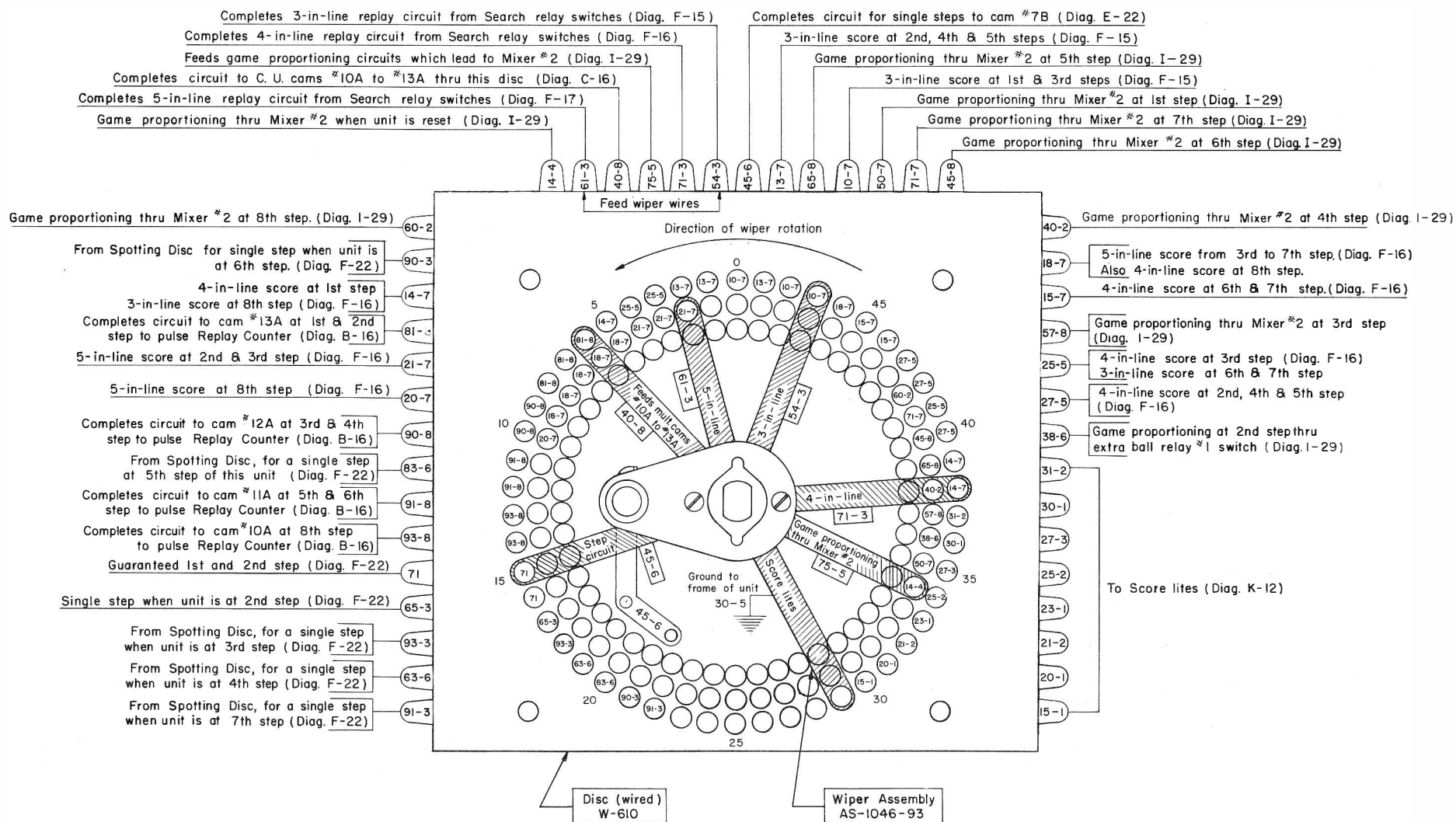
For additional single steps see circuits of wires 65-3; 93-3; 63-6; 83-6; 90-3; 91-3 on next page, which are explained in more detail.

Multiple steps occur on this unit when the Score Extra Step Assembly stops on one of its irregular shaped ledges at the same time that a single step occurs. (See Mixer Spotting Unit).

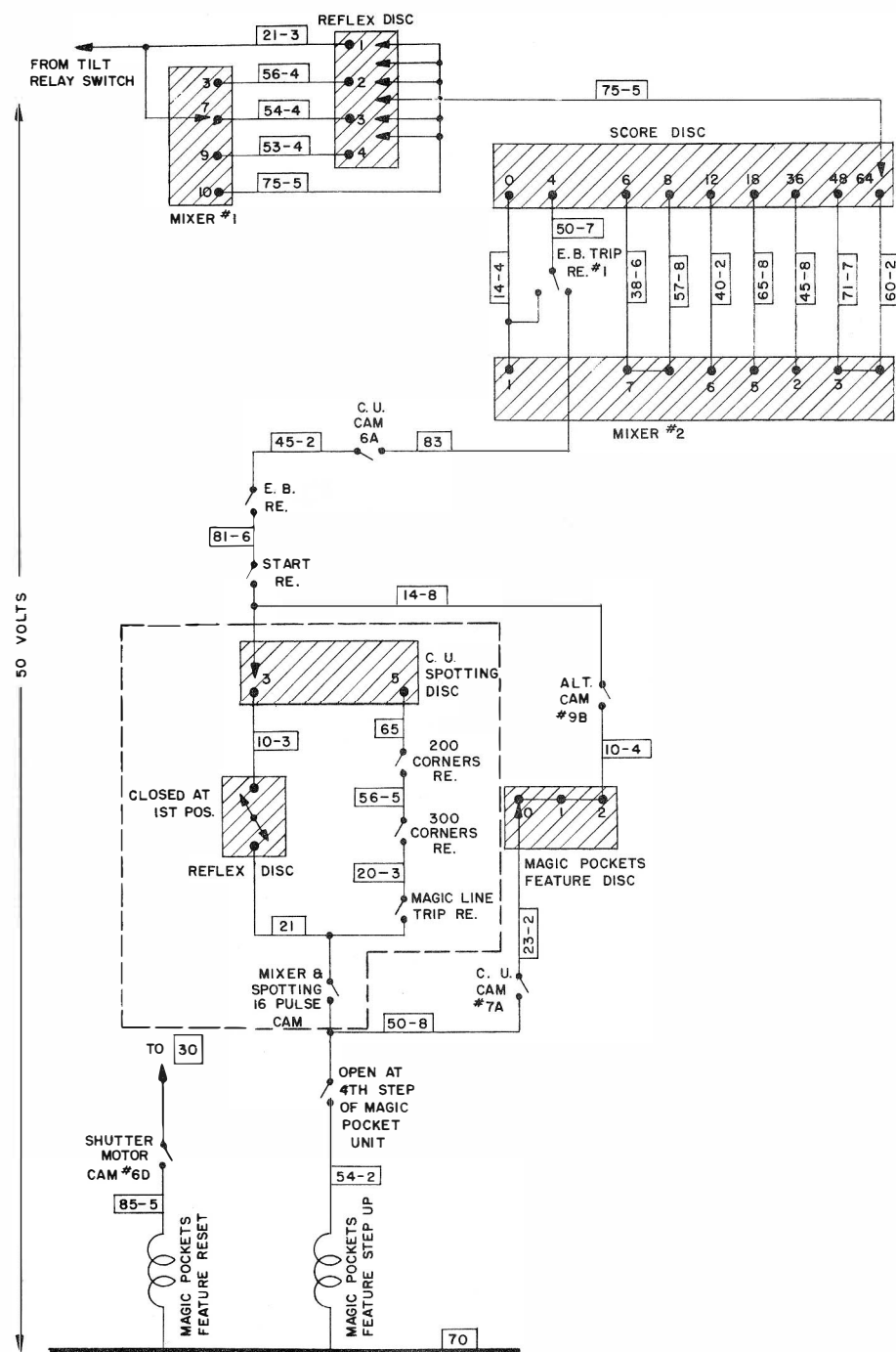
The score unit at the time it makes a single step energizes the Score Extra Step Relay and a switch on it completes the circuit for multiple steps.

SCORE UNIT viewed from BUTTON or WIPER side

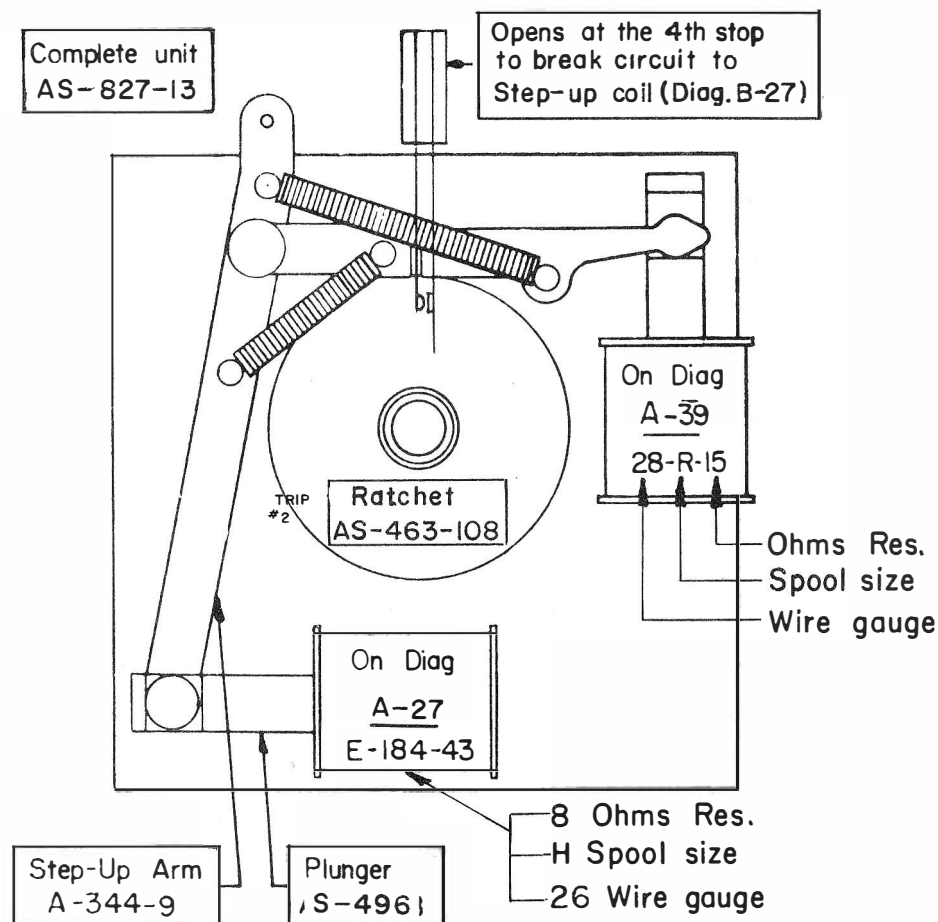
8 step unit. Wipers shown in zero or reset position



MAGIC-POCKETS FEATURE STEP-UP AND RESET CIRCUIT



MAGIC-POCKETS FEATURE UNIT viewed from COIL side



FUNCTION OF MAGIC-POCKETS FEATURE UNIT

The Magic Pockets Feature Unit resets at the start of a new game when Shutter Motor Cam Switch No. 6D closes.

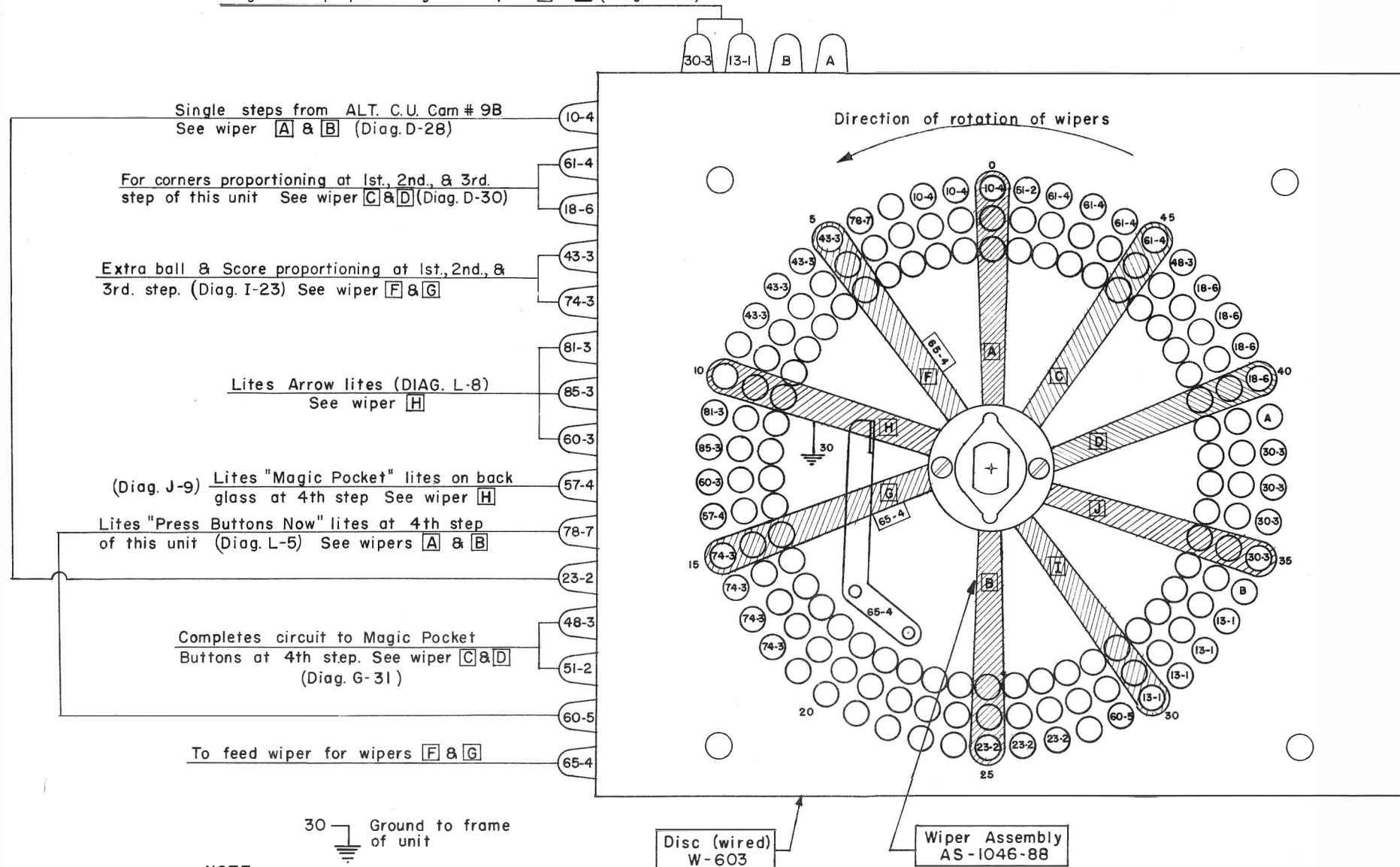
The run circuit to the top of this unit is thru the dotted portion of the circuit shown on this page.

Wipers A and B are used for single steps thru wires 10-4 and 23-2.

MAGIC-POCKETS FEATURE UNIT viewed from BUTTON or WIPER side

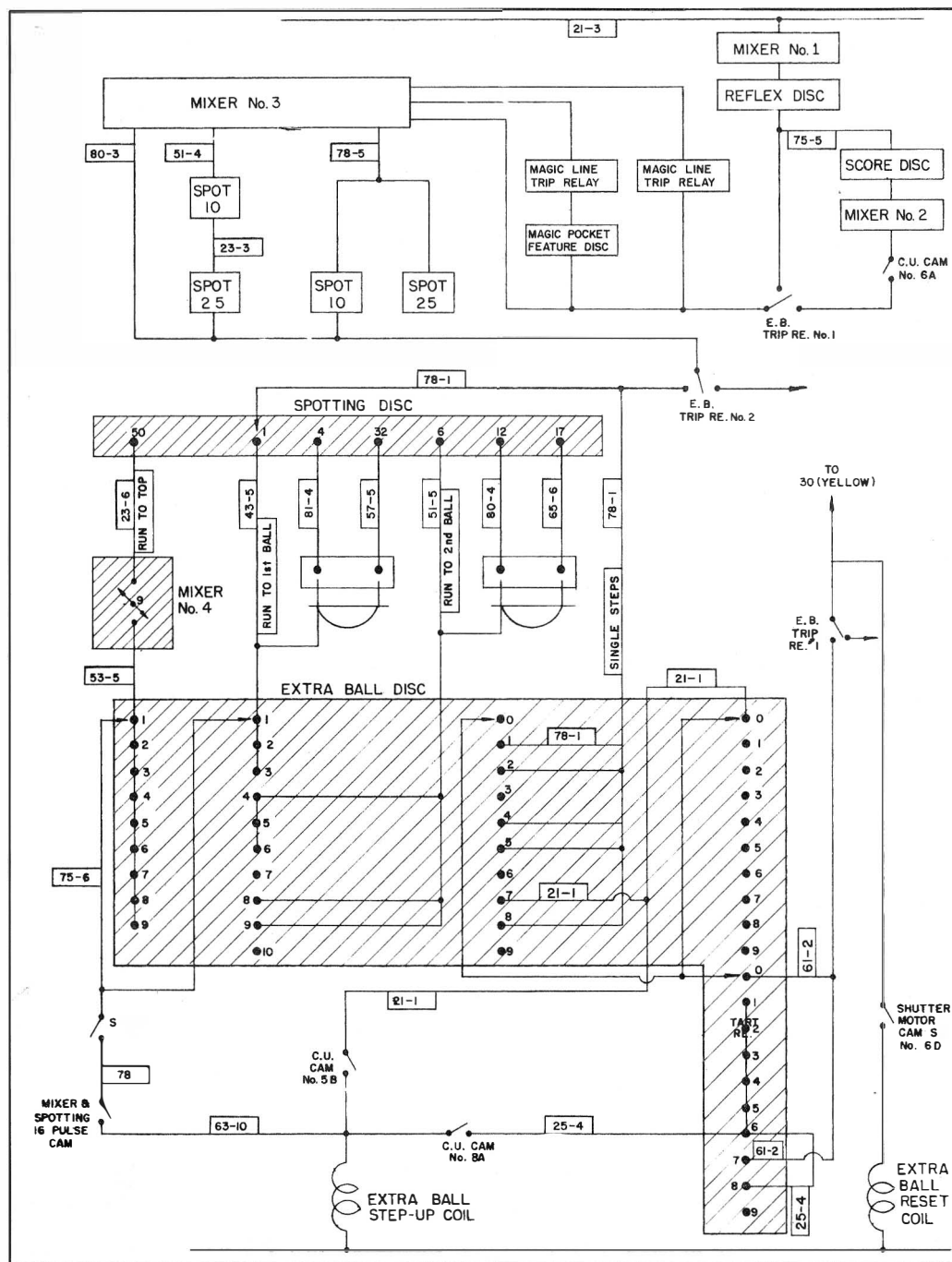
4 step unit. Wipers shown in zero or reset position

Magic Line proportioning see wipers **I** & **■** (Diag. E-29)

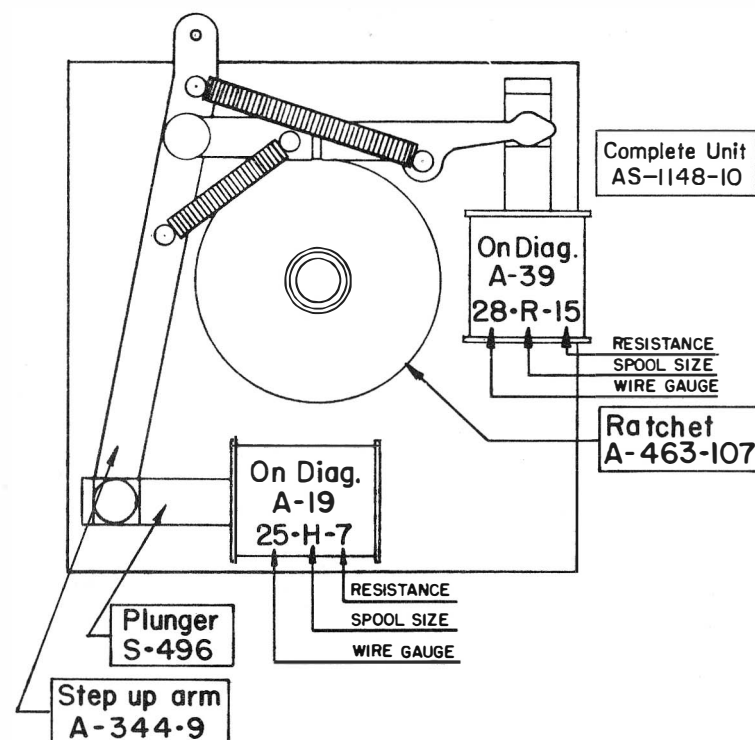


NOTE

Wipers **A** & **B** are paired and insulated
 " **C** & **D** " " " "
 " **J** & **I** " " " "
 " **F** & **G** " " but fed by 65-4 on feed wiper



EXTRA BALL UNIT viewed from COIL side



FUNCTION OF EXTRA BALL UNIT

The Extra Ball Unit resets to zero position at the start of a new game when Shutter Motor Cam Switch No. 6D operates.

The first spin that occurs on Extra Ball play will allow cam No. 5B to step the unit to its first position. (Wipers F and E).

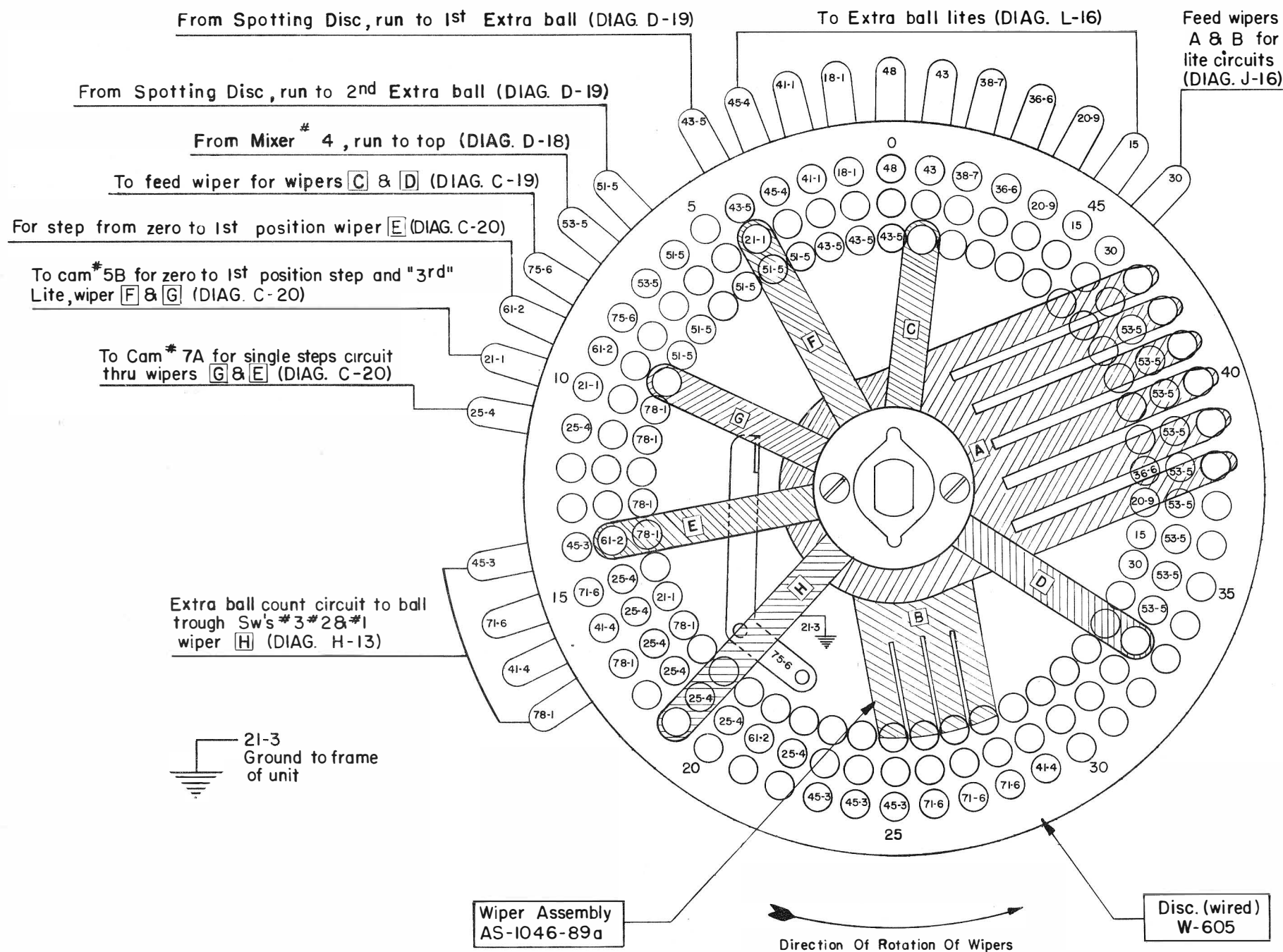
Single step circuits are made thru G and wire No. 78-1 (see next page).

The circuit to the 1st Extra Ball is made thru wiper C and wire No. 43-5 (see next page). The same wiper carries the circuit for stepping to the 2nd extra ball, and 3rd extra ball.

For a complete circuit to the top of the unit, wiper D completes a circuit thru wire No. 53-5.

EXTRA BALL UNIT viewed from BUTTON or WIPER side

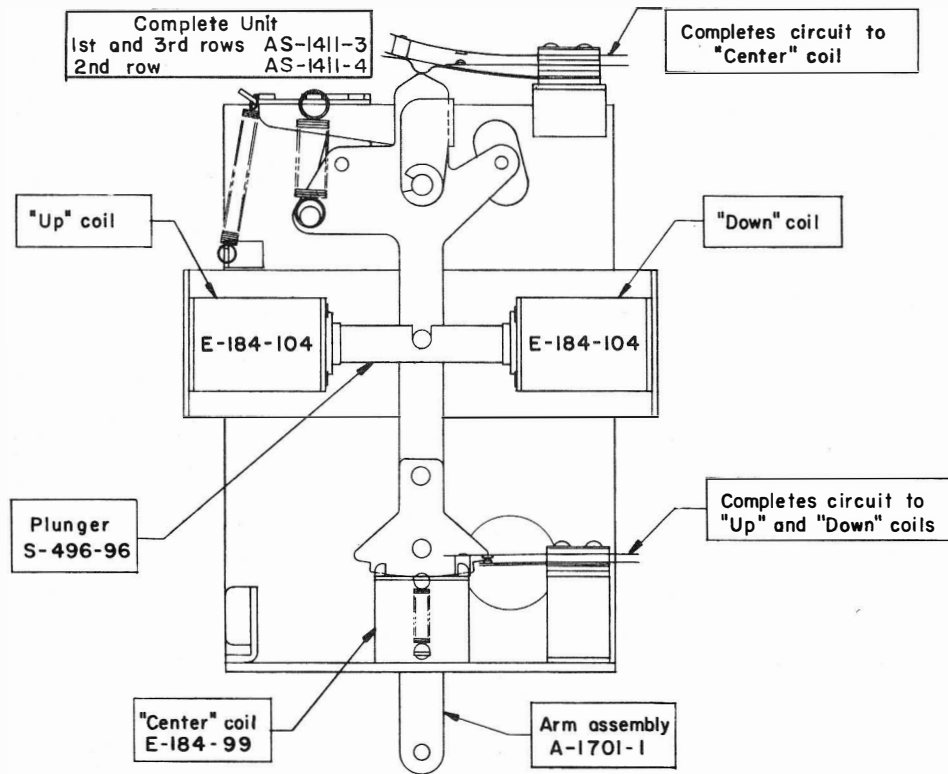
10 step unit. Wipers shown in zero or reset position



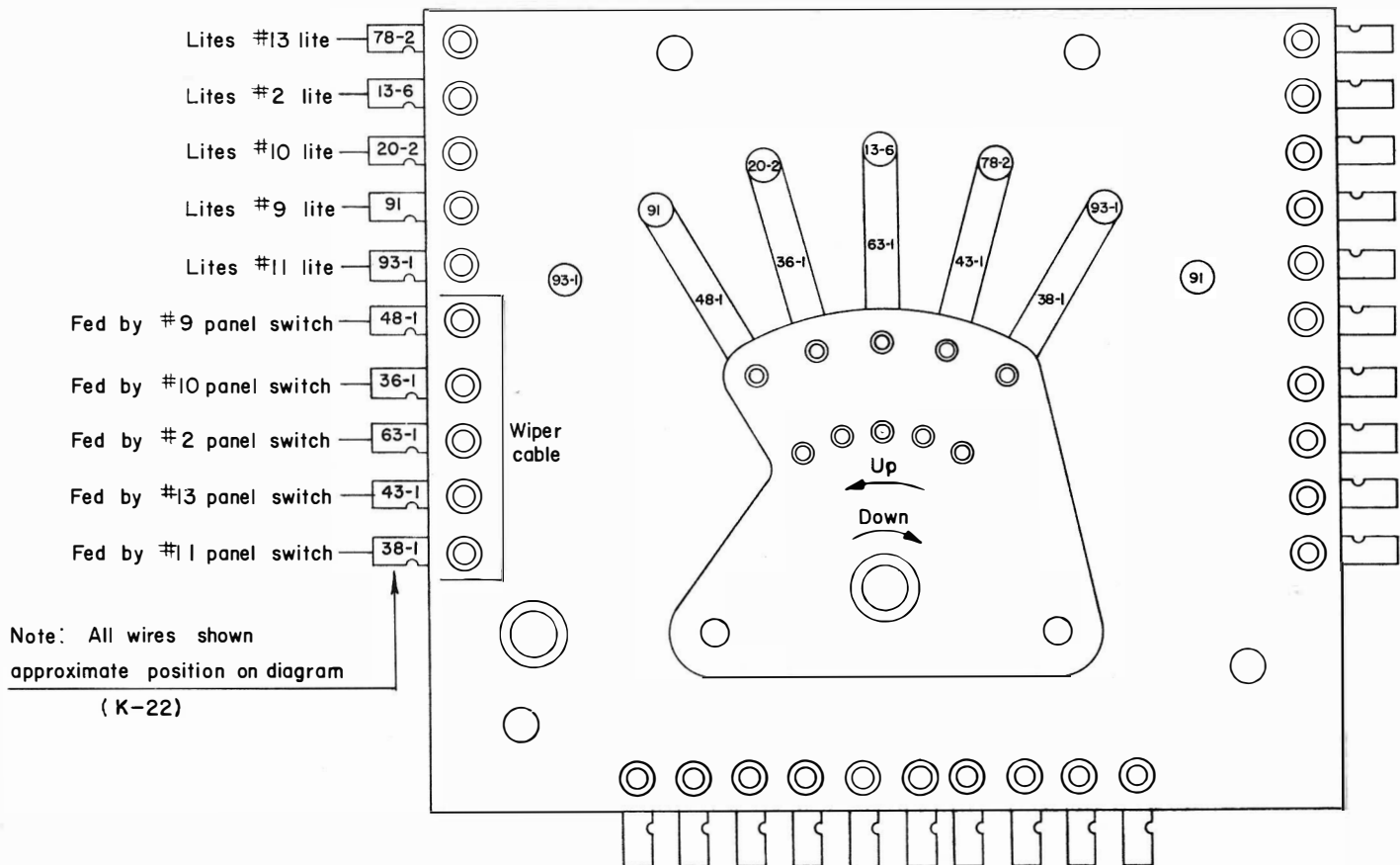
SHIFT UNIT (1st ROW) viewed from COIL side

All 3 Shift Units are exactly alike from coil side

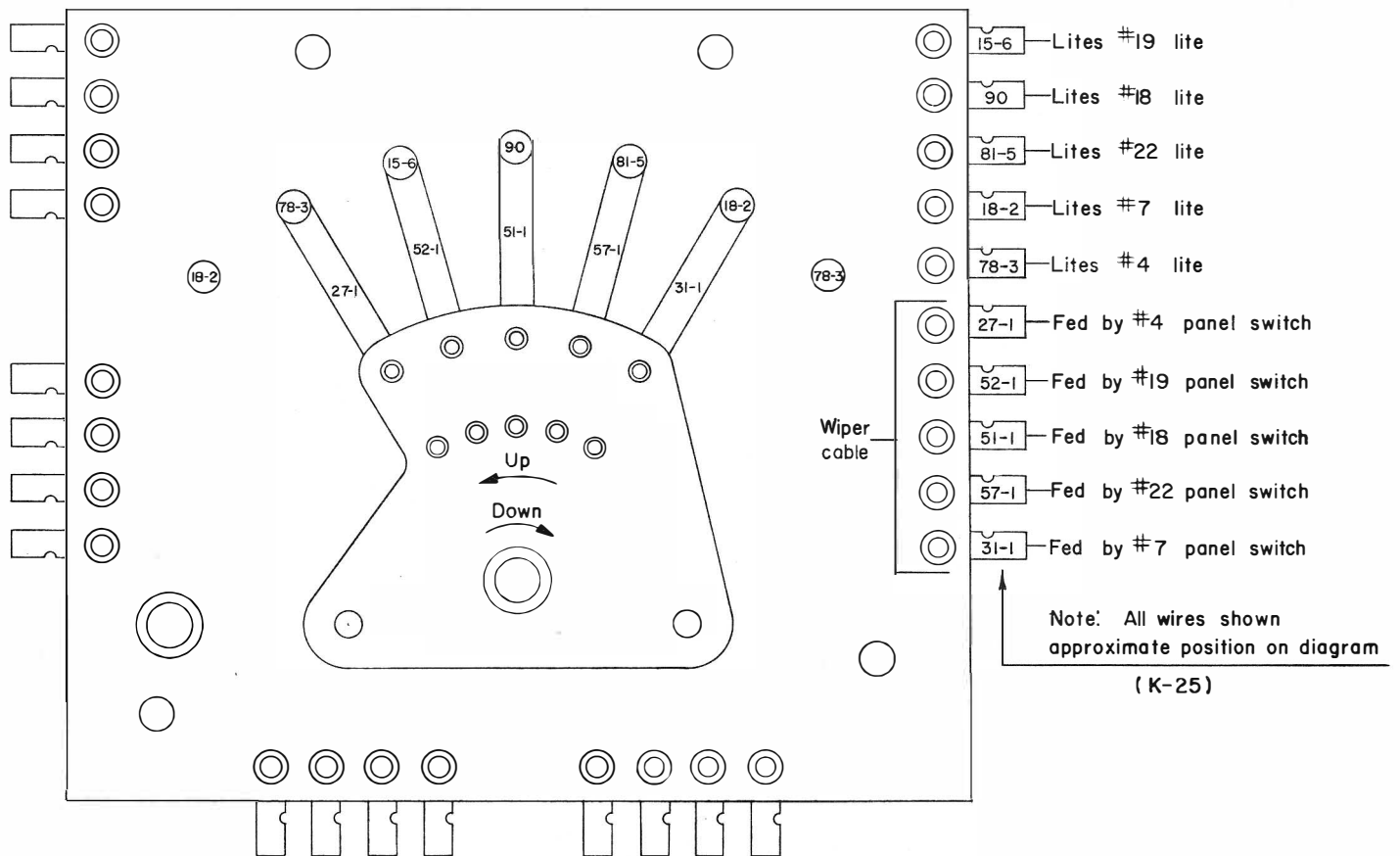
All Coils and Switches shown approximate position on Diagram B-24



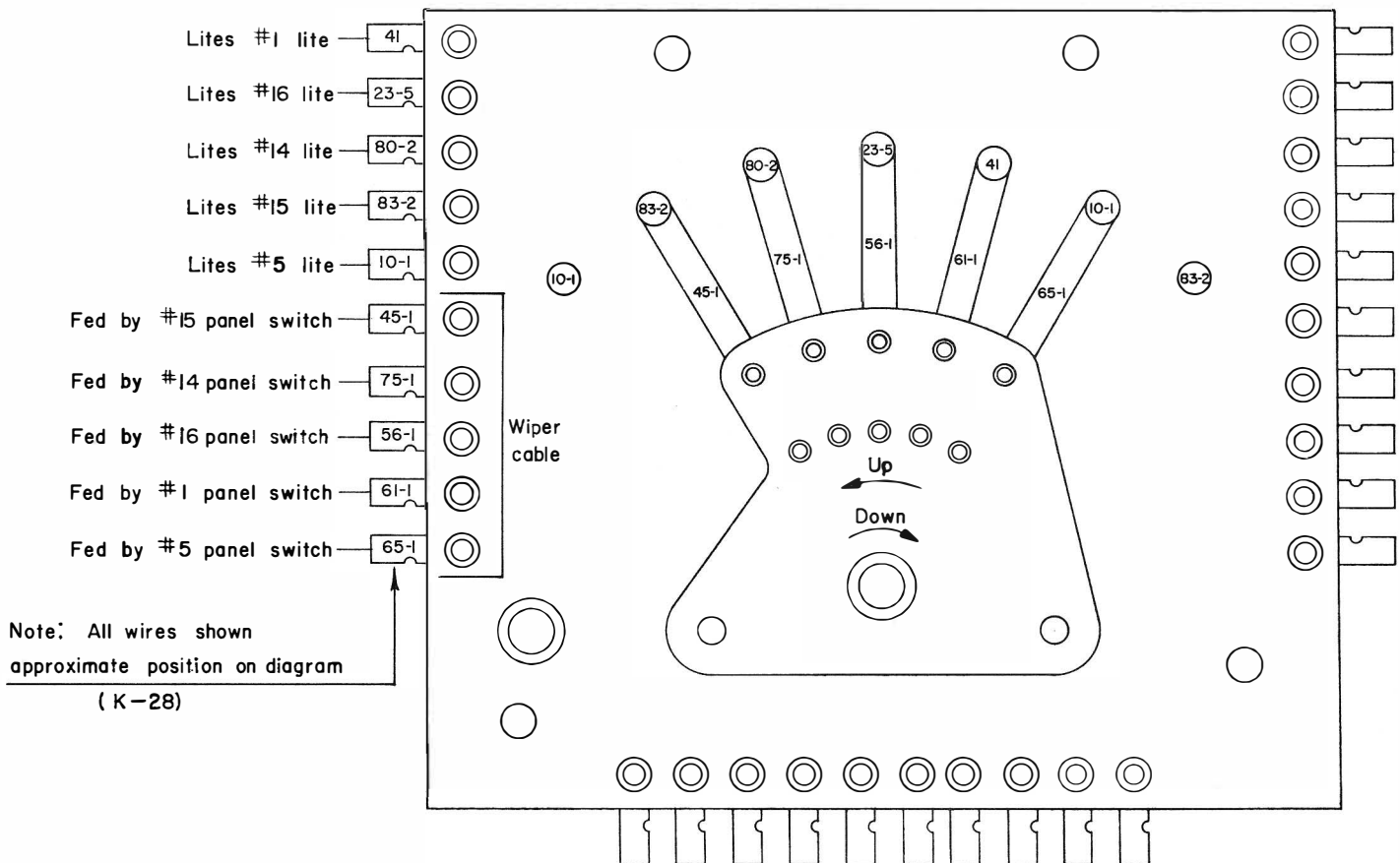
SHIFT UNIT (1st ROW) viewed from BUTTON or WIPER side (See following page for other rows)



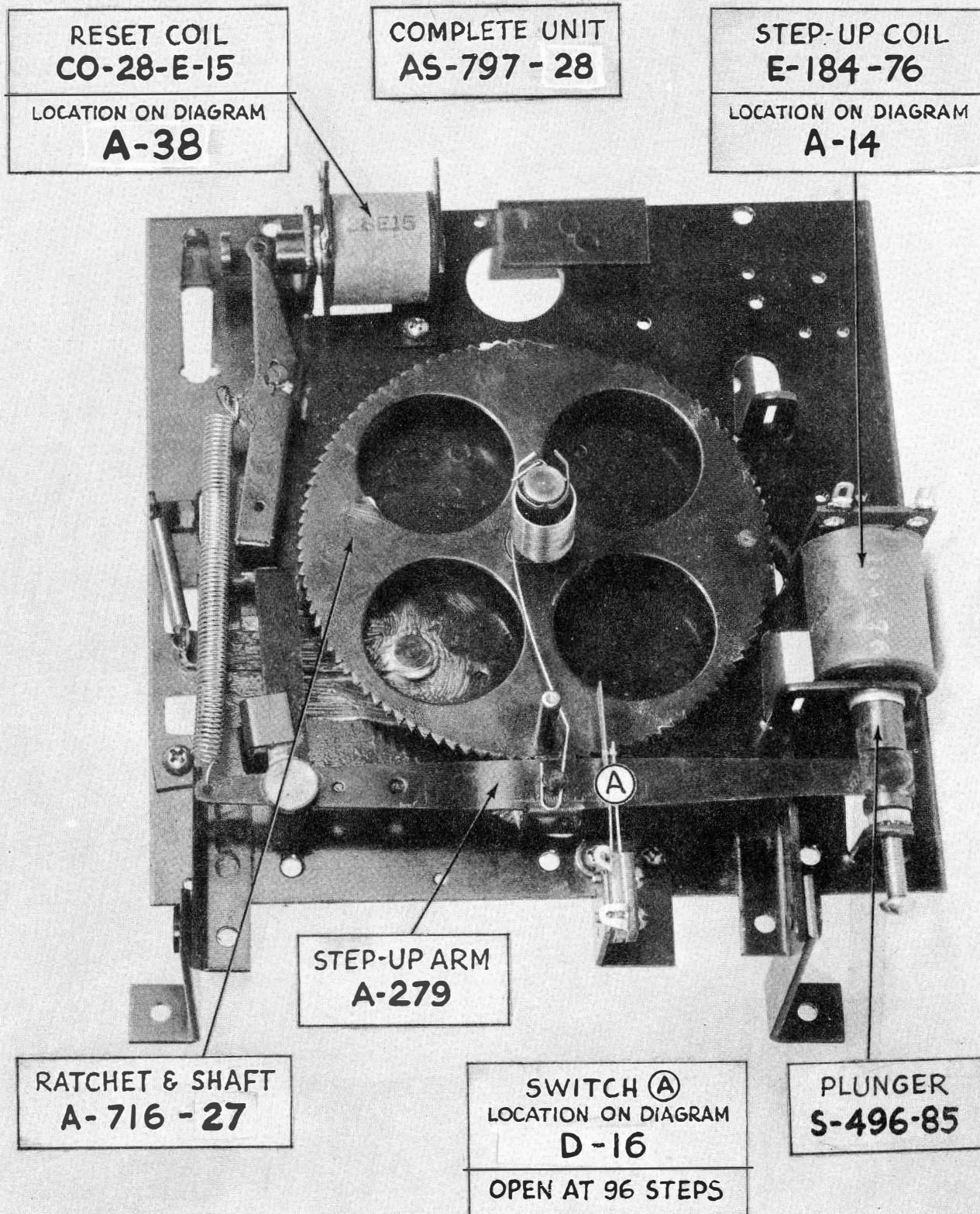
SHIFT UNIT (2nd ROW) viewed from BUTTON or WIPER side



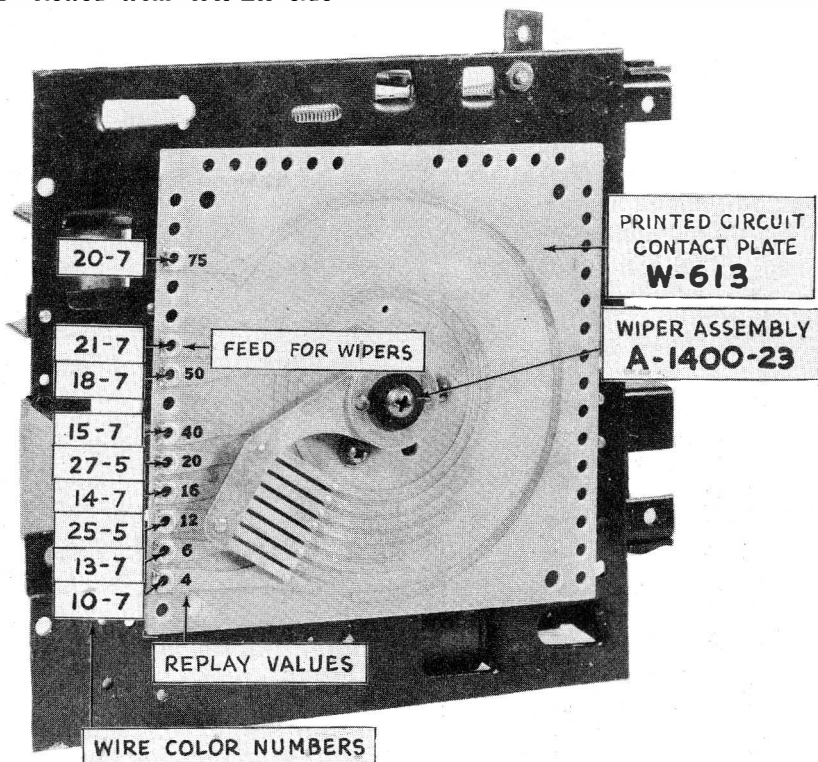
SHIFT UNIT (3rd ROW) viewed from BUTTON or WIPER side



REPLAY COUNTER viewed from COIL side



REPLAY COUNTER viewed from WIPER side



CAM SWITCHES THAT PULSE REPLAY COUNTER STEP-UP COIL

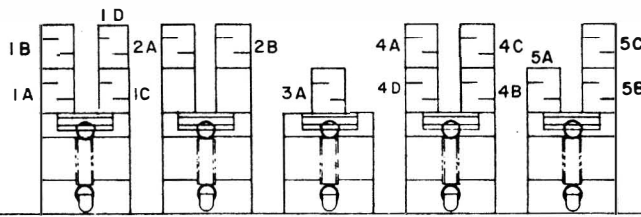
	sw.13A	sw.13A	sw.12A	sw.12A	sw.11A	sw.11A	sw.10A	sw.10A
5 IN LINE	96 <small>NOTE</small>	96 <small>NOTE</small>	100 <small>50</small>	100 <small>50</small>	150 <small>50</small>	150 <small>50</small>	200 <small>50</small>	300 <small>75</small>
4 IN LINE	16 <small>16</small>	20 <small>20</small>	24 <small>12</small>	40 <small>20</small>	60 <small>20</small>	120 <small>40</small>	160 <small>40</small>	200 <small>50</small>
3 IN LINE	4 <small>4</small>	6 <small>6</small>	8 <small>4</small>	12 <small>6</small>	18 <small>6</small>	36 <small>12</small>	48 <small>12</small>	64 <small>16</small>

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 **36** REPLAYS
THE CIRCUIT IS EFFECTIVE THRU THE **12** REPLAY CIRCUIT
STRIP

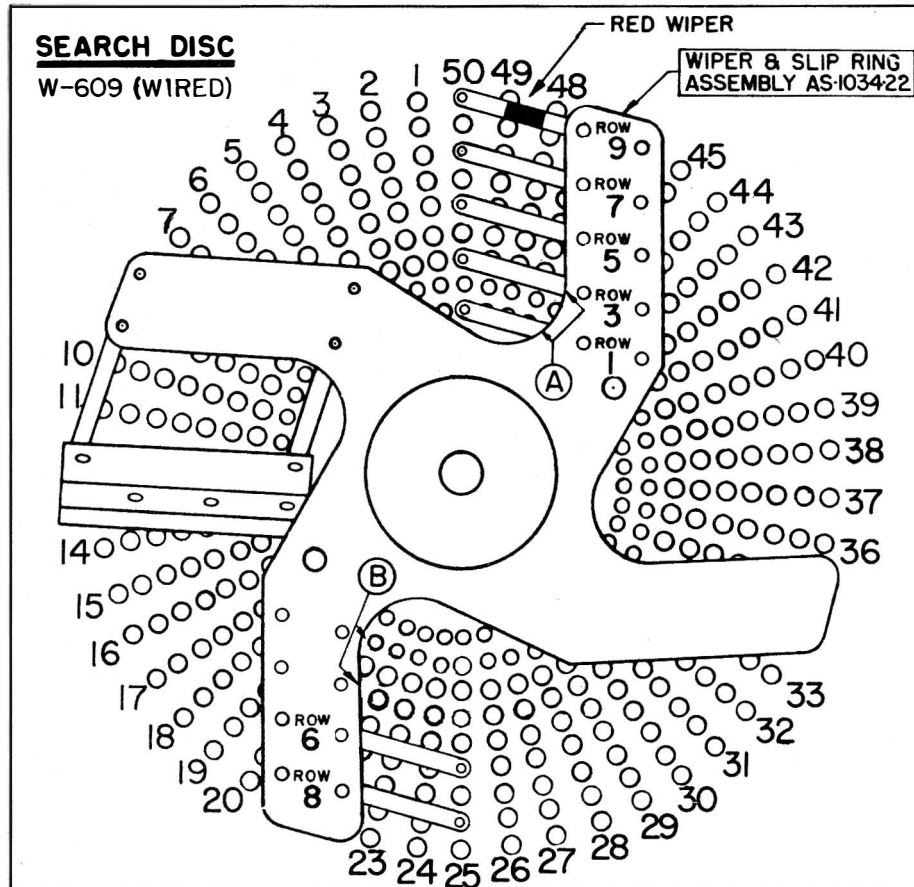
NOTE: 96 VALUE REPLAY SCORE IS EFFECTIVE THRU
THE OPEN AT 96 SWITCH.

#1 #2 #3 #4 #5



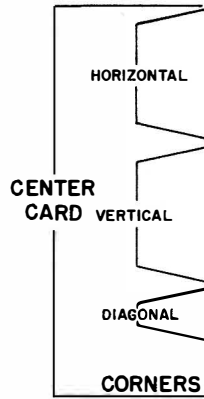
RELAY	COIL	ARMATURE
#1	C-2342-59	Z-44-29
#2	C-2342-59	Z-44-29
#3	C-2342-59	Z-44-12
#4	C-2342-88	Z-44-29
#5	C-2342-59	Z-44-29

Corner Scores		3 in line scores		4 in line scores		5 in line scores	
Switch no	Wire no's & color	Switch no	Wire no's & color	Switch no	Wire no's & color	Switch no	Wire no's & color
3A	18-4 red-black 50-3 white	3A	18-4 red-black 50-3 white	3A	18-4 red-black 50-3 white	3A	18-4 red-black 50-3 white
2A	50-3 white 56-3 white-brown	2B	50-3 white 51-3 white-red	2A	50-3 white 56-3 white-brown	2A	50-3 white 56-3 white-brown
4D	56-3 white-brown 75-7 orange-white	1B	51-3 white-red 54-3 white-green	4C	56-3 white-brown 53-3 white-yellow	4C	56-3 white-brown 53-3 white-yellow
1D	75-7 orange-white 23-4 blue-yellow	3A	18-4 red-black 50-3 white	1A	53-3 white-yellow 71-3 orange-red	5C	53-3 white-yellow 57-3 white-orange
		2B	50-3 white 51-3 white-red	3A	18-4 red-black 50-3 white	1C	57-3 white-orange 61-3 brown-red
		4B	51-3 white-red 54-3 white-green	2A	60-3 white 56-3 white-brown		
		3A	18-4 red-black 50-3 white	4C	56-3 white-brown 53-3 white-yellow		
		4A	50-3 white 52-3 white-blue	5B	53-3 white-yellow 71-3 orange-red		
		5A	52-3 white-blue 54-3 white-green				



WIPERS (A) FED BY WIRE 80 (ON DIAG. C-15) THRU FEED WIPER. COMPLETES CIRCUIT TO SEARCH INDEX COIL AND REPLAY COUNTER STEP-UP COIL, WHEN SCORING REPLAYS.

SEARCH POSITIONS					
RED WIPER POSITION	ROW 7 SEARCH RELAY#1	ROW 8 SEARCH RELAY#2	ROW 9 SEARCH RELAY#3	ROW 6 SEARCH RELAY#4	ROW 5 SEARCH RELAY#5
1	A	F	K	24	8
2	B	G	L	20	6
3	C	H	M	12	25
4	D	I	N	21	17
5	E	J	O	23	3
6	A	B	C	D	E
7	F	G	H	I	J
8	K	L	M	N	O
9	24	20	12	21	23
10	8	6	25	17	3
11	8	20	M	I	E
12	A	G	M	21	3
13					
14	A	6	3	E	
15					
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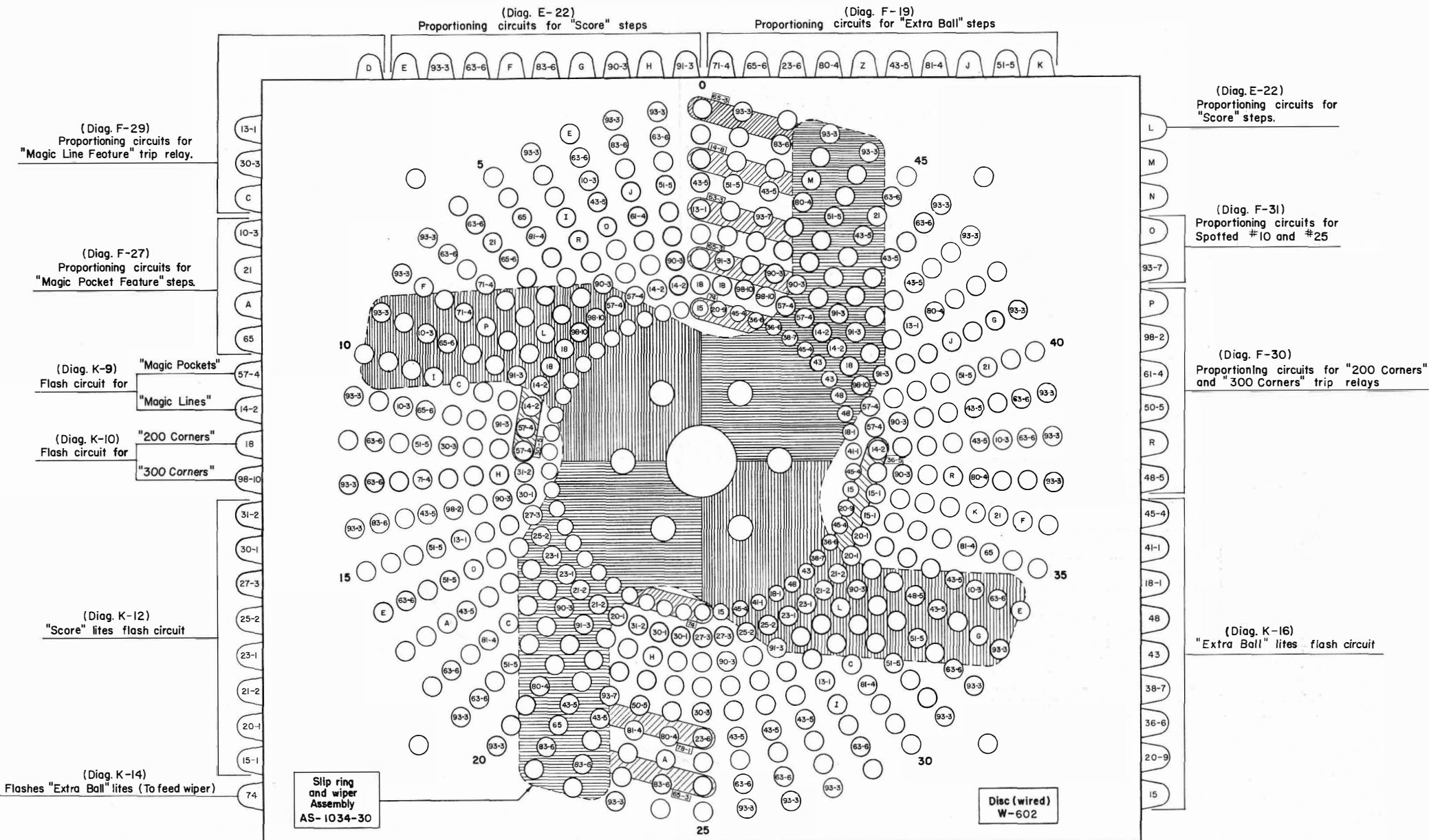
CENTER CARD WINDOWS

A	F	K	24	8
B	G	L	20	6
C	H	M	12	25
D	I	N	21	17
E	J	O	23	3

1st ROW | 2nd ROW | 3rd ROW

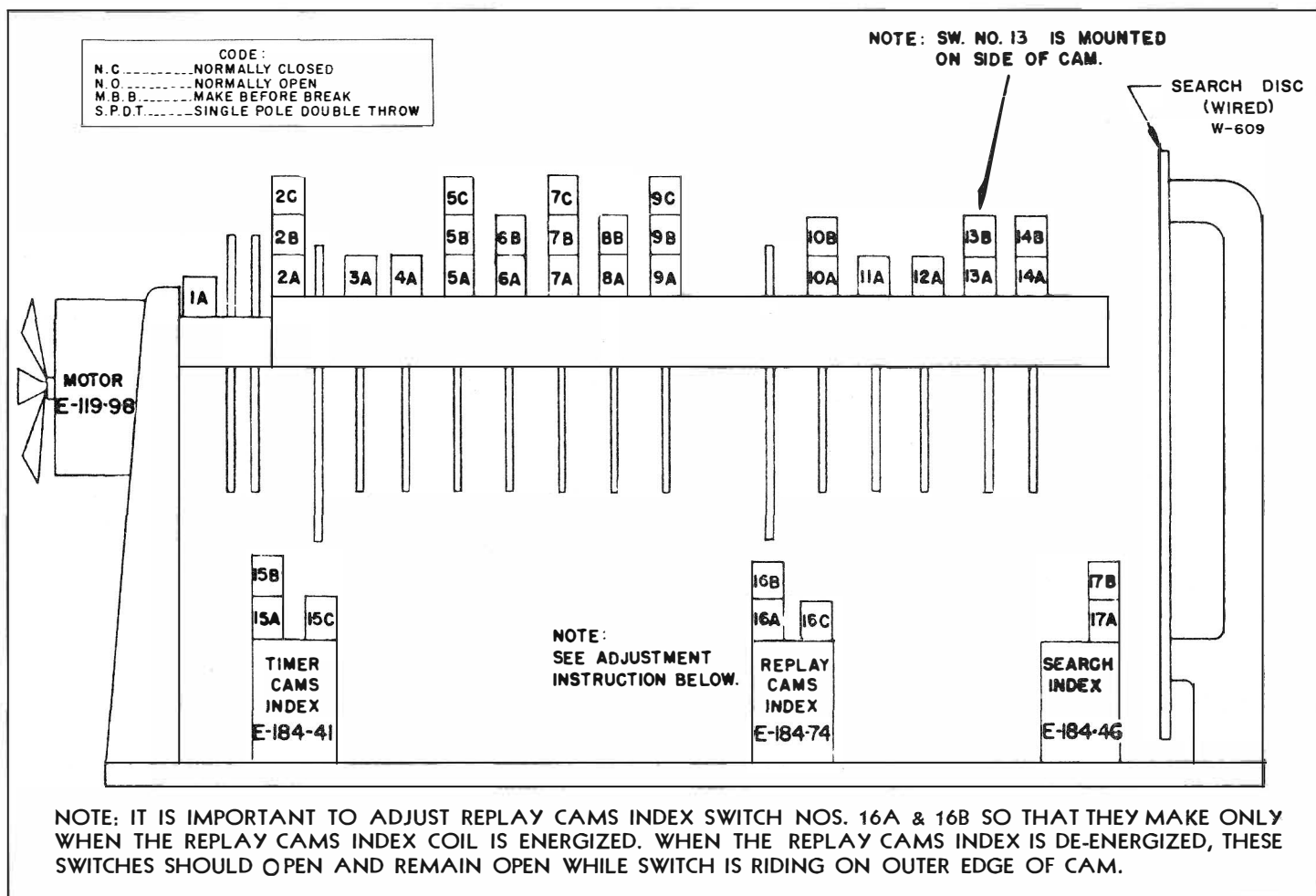
WINDOW	1st ROW SHIFT			WINDOW	2nd ROW SHIFT			WINDOW	3rd ROW SHIFT		
	UP	CENTER	DOWN		UP	CENTER	DOWN		UP	CENTER	DOWN
A	10	9	11	F	19	4	7	K	14	15	5
B	2	10	9	G	18	19	4	L	16	14	15
C	13	2	10	H	22	18	19	M	1	16	14
D	11	13	2	I	7	22	18	N	5	1	16
E	9	11	13	J	4	7	22	O	15	5	1

SPOTTING DISC viewed from BUTTON or WIPER side



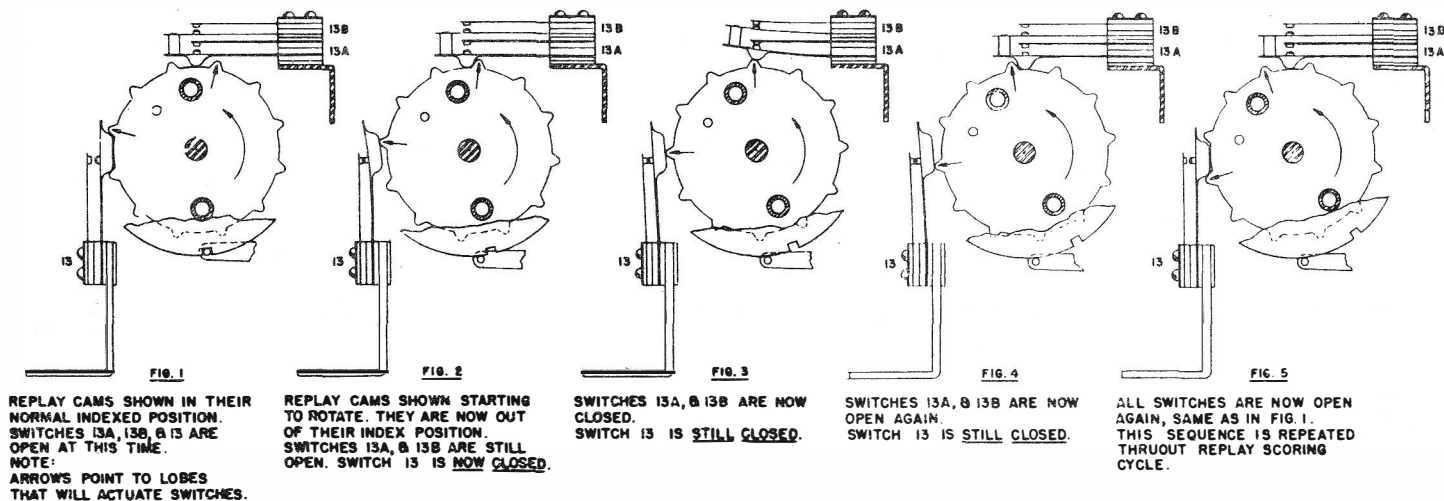
CONTROL UNIT PICTORIAL VIEW

NUMBERS CORRESPOND TO SWITCH CHART



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 SWITCH CHART FOR POSITION OF SWITCHES SEE PICTORIAL VIEW

CAM SWITCH		LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
1A	N. O.	F-10	65-2 36-10	Brown-White Yellow-Brown	Energizes timer step-up coil when drag arm switch, selector lock relay switch and cam switch 14B are closed.
2A	N. O.	I-5	30 27-4	Yellow Blue-Orange	Energizes replay register reset and reflex play magnet.
2B	N. O.	C-36	30 93-4	Yellow Gray-Yellow	Energizes coin kicker magnet.
2C	N. C.	G-11	31-7 15-2	Yellow-Red Red-White	Drops out extra ball play relay.
3A	N. C.	I-6	83-3 48-2	Black-Yellow Green-Black	Drops out start relay, and acts as a safety switch during spin.
4A	N. O.	C-40	30 98-1	Yellow Gray-Black	Energizes score extra step index and spotting index.
5A	N. O.	F-9	65-2 71-9	Brown-White Orange-Red	Energizes timer reset coil.
5B	N. O.	B-20	63-10 21-1	Brown-Yellow Blue-Red	Energizes extra ball unit step-up coil. Steps unit from minus one position to zero position.
5C	N. O.	D-37	78-4 10-6	Orange-Black Red	Energizes anti-cheat relay.
6A	N. C.	H-30	83 45-2	Black-Yellow Green-White	Opens game advantage circuits during timing cycle.
6B	N. C.	C-22	43-8 25-3	Green-Yellow Blue-White	Score extra step safety switch.
7A	N. O.	B-27	23-2 50-8	Blue-Yellow White	"Magic Pocket" unit steps.
7B	N. O.	F-29	14-8 63-3	Red-Green Brown-Yellow	Energizes 200 and 300 corners relays, magic line relay, also 10 and 25 spot relays.
8A	N. O.	B-20	63-10 25-4	Brown-Yellow Blue-White	Extra ball unit steps.
8B	N. O.	D-22	45-6 52-9	Green-White White-Blue	Score unit steps.
8C	N. O.	C-36	30 93-4	Yellow Gray-Yellow	Energizes coin kicker magnet.
9A	Alt.	D-22	71 43-8	Orange-Red Green-Yellow	Opens score extra step circuit every other time.
9B	Alt.	D-28	10-4 14-8	Red Red-Green	Opens "magic pocket" single step circuit every other time.
9C	S.P.D.T.	C-31	91-7 93-7 98-5	Gray-Red Gray-Yellow Gray-Black	Completes circuit to #10 or #25 spot relays.

CONTINUED ON NEXT PAGE

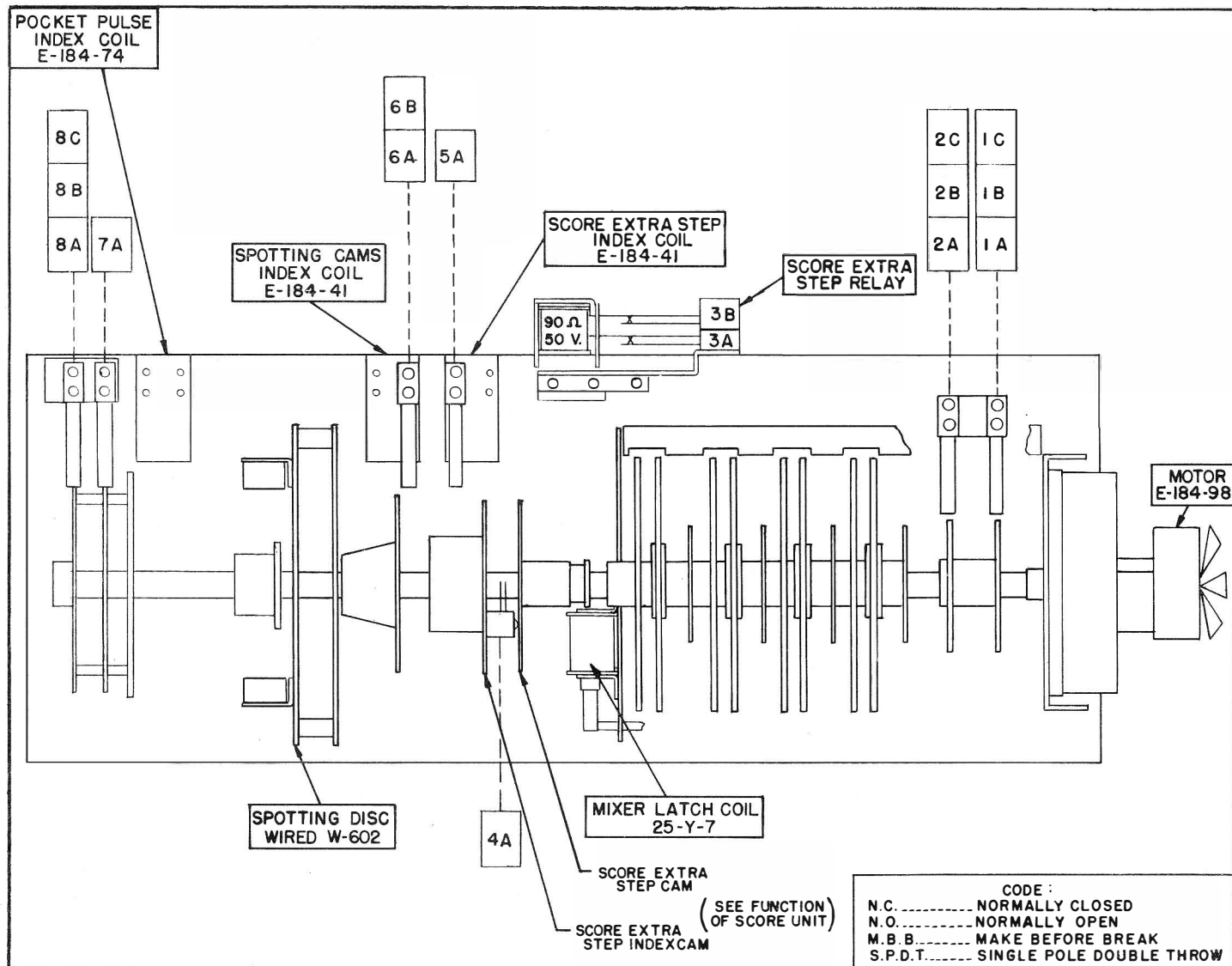
CONTROL UNIT CAM SWITCH CHART — CONCLUDED

CAM SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
10A N. O.	B-16	54-8 93-8	White-Green Gray-Yellow	Pulses replay counter when score unit is at last step.
10B N. O.	B-18	38-8 53-10	Yellow-Black White-Yellow	Pulses corners replay counter.
11A N. O.	B-16	91-8 54-8	Gray-Red White-Green	Pulses replay counter when score unit is at 5th and 6th step.
12A N. O.	B-15	90-8 54-8	Gray White-Green	Pulses replay counter when score unit is at 3rd, 4th and 7th step.
13A N. O.	B-15	54-8 81-8	White-Green Black-Red	Pulses replay counter when score unit is at 1st and 2nd step.
13B N. O.	C-14	80 38-4	Black Yellow-Black	Pulses replay register and reflex play magnet.
13 (Backside) N. O.	H-14	21-3 27	Blue-Red Blue-Orange	Replay lock-in switch. NOTE: See pictorial view page 287.
14A N. C.	I-15	56-7 93	White-Brown Gray-Yellow	Prevent the start of another replay scoring until cams are indexed.
14B N. C.	B-10	27-2 90-9	Blue-Orange Gray	Opens circuit to timer step up during replay winner.
TIMER CAM INDEX COIL	A-8	93-2 70	Gray-Yellow Orange	Energized by switches on start and extra ball play relay, also thru shutter motor cam switch #5C.
15A N. O.	H-2	60-P 20-P	Brown-Plastic Blue-Plastic	Operates mixer and control unit motor.
15B N. C.	G-7	71-2 14-9	Orange-Red Red-Green	Opens circuit to coin lock-out magnet during spin.
15C S. P. D. T.	D-11	52-6 13 74-2	White-Blue Red-Yellow Orange-Green	Lock in safety switch for extra ball play relay.
REPLAY CAMS INDEX COIL	A-13	40-4 70	Green Orange	Energizes when winning score is made and releases replay cams.
16A N. O.	D-14	27 80	Blue-Orange Black	In series with replay lock in circuit. NOTE: See pictorial view Page 287 for correct adj.
16B N. O.	I-15	93 56-7	Gray-Yellow White-Brown	In series with replay winner circuit. NOTE: See pictorial view Page 287 for correct adj.
16C N. C.	F-11	15-2 74-2	Red-White Orange-Green	Opens circuit to extra ball play relay, when replays are scoring.
SEARCH INDEX COIL	A-13	80 70	Black Orange	Energizes when 3 in line or more is scored.
17A N. O.	B-13	80 40-4	Black Green	Energizes replay cams index if a score is made.
17B N. C.	J-6	83-3 30	Black-Yellow Yellow	Opens start circuit and also acts as a safety switch.

CONTINUED ON NEXT PAGE

MIXER AND SPOTTING UNIT ASSEMBLY PICTORIAL VIEW

NUMBERS CORRESPOND TO SWITCH CHART



MIXER AND SPOTTING UNIT 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.O.	E-5	53-2 75-2	White-Yellow Orange-White	Pulse switch for operating replay register reset, and replay meter, when replay relay is energized.
1B N.O.	B-27	50-8 21	White Blue-Red	Pulse switch for multiple steps of "magic pocket" unit.
2A N.O.	K-4	71-5 60-5	Orange-Red Brown	Flashes "turn knobs now" lite and "press buttons now" lite.
2B N.O.	B-19	78 63-10	Orange-Black Brown-Yellow	Steps extra ball unit for multiple steps.
2C N.O.	F-18	31-5 85-7	Yellow-Red Black-White	Steps corners replay counter to its zero position. (In series with corners unit homing switch.)

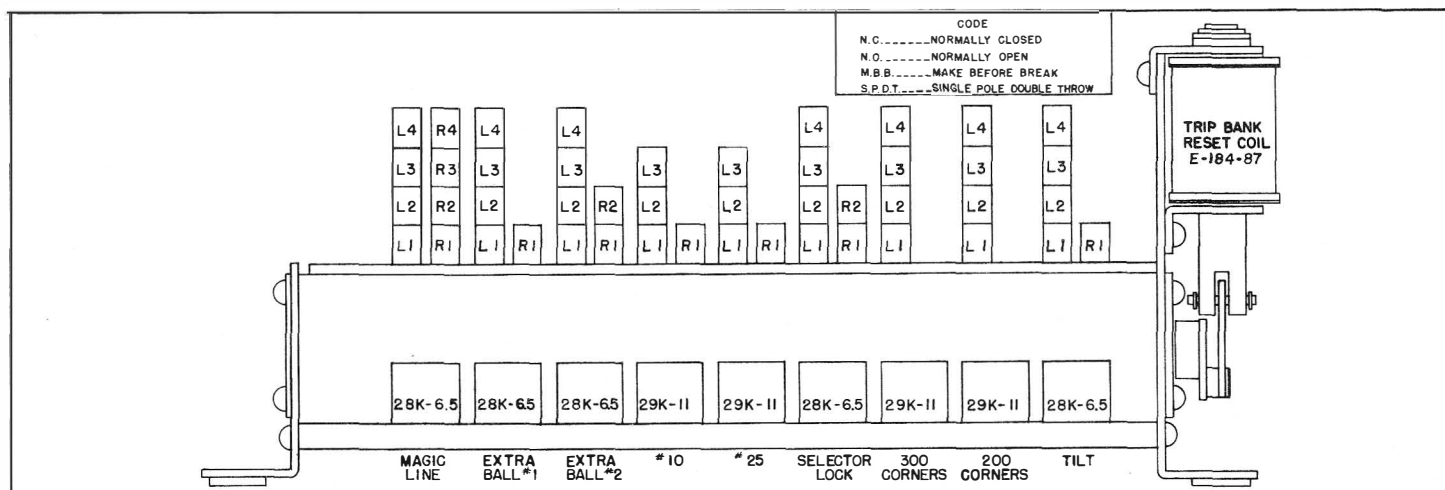
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MIXER AND SPOTTING UNIT SWITCH CHART — CONCLUDED

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
SCORE EXTRA STEP RELAY COIL	A-35	43-6 70	Green-Yellow Orange	Energized by score unit step-up arm switch.
3A N.O.	C-35	43-6 81-1	Green-Yellow Black-Red	Completes lock-in circuit to score extra step relay.
3B N.O.	B-22	52-9 40-5	White-Blue Green	Completes circuit to score unit for multiple steps.
4A N.O.	C-22	40-5 25-3	Green Blue-White	Pulse switch for multiple steps of score unit.
SCORE EXTRA STEP INDEX COIL	A-40	98-1 70	Gray-Black Orange	Energized during timing cam cycle by control unit cam switch #4B.
5A N.O.	D-35	75-5 81-1	Orange-White Black-Red	Completes lock-in circuit to score extra step relay.
SPOTTING CAM INDEX COIL	A-40	98-1 70	Gray-Black Orange	Energized during timing cam cycle by control unit cam switch #4B.
6A N.O.	J-10	30 83-4	Yellow Black-Yellow	Completes flash circuit for "magic pocket" feature lites and "magic line" feature lites.
6B N.O.	J-13	30 13-4	Yellow Red-Yellow	Completes flash circuit for score lites and corners lites also for extra ball lites.
7A S.P.D.T.	G-33	13-2 30 90-4	Red-Yellow Yellow Gray	Homes pocket pulse index cams to correct index position.
8A N.C.	H-2	10-P 20-P	Red (Plastic) Blue (Plastic)	Safety switch for "move left" and "move right" solenoids.
8B N.C.	M-26	10 60-2	Red Brown	Safety switch for #2 and #6 booster coils.
8C N.C.	D-32	18-2 30	Red-Black Yellow	Lock-in switch for "left" and "right" relays.

TRIP RELAY BANK PICTORIAL VIEW

NUMBERS CORRESPOND TO SWITCH CHART



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

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
MAGIC LINE TRIP COIL	A-28	13-1 70	Red-Yellow Orange	Energized by control unit cam switch #8C when spotting disc wipers stop on correct position.
L1 N. C.	D-30	18-6 98-2	Red-Black Gray-Black	Proportioning switch for 200 and 300 corners feature.
L2 N. C.	I-23	63-4 74-3	Brown-Yellow Orange-Green	Proportioning switch for score and extra ball steps.
L3 N. O.	L-4	41-5 60-5	Green-Red Brown	Complete circuit to flash turn knobs now lite at 4th step of timer unit.
L4 N. O.	E-31	93-7 81-2	Gray-Yellow Black-Red	Proportioning switch for spotting #10 and #25.
L5 N. C.	D-27	21 20	Blue-Red Blue	Proportioning switch for "magic pocket" feature steps.
R1 N. C.	E-26	31 36	Yellow-Red Yellow-Brown	Completes circuit to knob discs.
R2 N. C.	H-24	43-3 65-4	Green-Yellow Brown-White	Proportioning switch for scores and extra balls.
R3 N. O.	K-6	14-2 30	Red-Green Yellow	Completes circuit to lite magic lines lite, and select before 4th ball lite.
R4 N. C.	B-28	13-1 13-1	Red-Yellow Red-Yellow	Breaks circuit to this coil.
EXTRA BALL #1 TRIP COIL	A-11	23-7 70	Blue-Yellow Orange	Energized by switch on extra ball play relay.
L1 N. O.	C-13	38-3 91-3	Yellow-Black Gray-Red	Completes circuit to ball lifter motor when playing for extra balls.
L2 N. C.	B-11	23-7 31-7	Blue-Yellow Yellow-Red	Breaks circuit to this coil.
L3 S. P. D. T.	H-27	75-5 65-5 45-2	Orange-White Brown-White Green-White	Extra ball proportioning switch.
L4 S. P. D. T.	H-29	83 50-7 14-4	Black-Yellow White Red-Green	Proportioning switch.
R1 N. O.	G-23	25-6 80-3	Blue-White Black	Extra ball proportioning switch.
EXTRA BALL #2 TRIP COIL	A-12	25-7 70	Blue-White Orange	Energized by switch on extra ball play relay.
L1 S. P. D. T.	D-20	71 30 61-2	Orange-Red Yellow Brown-Red	Shuts off score multiple step circuit and completes circuit to step extra ball unit from minus one to zero position.
L2 N. C.	B-12	25-7 31-7	Blue-White Yellow-Red	Breaks circuit to this coil.
L3 S. P. D. T.	F-21	65-3 80-3 78-1	Brown-White Black Orange-Black	Shuts off score advantages, and completes circuit to extra ball steps, during extra ball play.
L4 S. P. D. T.	J-14	30-5 13-4 74	Yellow Red-Yellow Orange-Green	Shuts off flashing of score lites, and completes circuit to flash extra ball lites.
R1 N. C.	G-27	45-2 81-6	Green-White Black-Red	Breaks circuit to all other game advantages when playing for extra balls.
R2 N. C.	K-10	36-5 83-4	Yellow-Brown Black-Yellow	Breaks flash circuit to magic lines feature, and magic pocket feature lites.

CONTINUED ON NEXT PAGE

TRIP RELAY BANK CHART — CONTINUED

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
#10 TRIP COIL	A-31	98-5 70	Gray-Black Orange	Energized by control unit cam switch #8C when spotting disc wipers stop on correct position.
L1 N.O.	J-21	36-1 30	Yellow-Brown Yellow	Lites spotted number 10 lite.
L2 N.C.	B-31	98-5 98-5	Gray-Black Gray-Black	Breaks circuit to this coil.
L3 N.C.	H-22	23-3 51-4	Blue-Yellow White-Red	Proportioning switch for score and extra ball steps.
R1 N.C.	H-21	78-5 80-3	Orange-Black Black	Proportioning switch for score and extra ball steps.
#25 TRIP COIL	A-31	91-7 70	Gray-Red Orange	Energized by control unit cam switch #8C when spotting disc wipers stop on correct position.
L1 N.O.	J-32	74-1 30	Orange-Green Yellow	Lites spotted number 25 lite.
L2 N.C.	B-31	91-7 91-7	Gray-Red Gray-Red	Breaks circuit to this coil.
L3 N.C.	G-21	78-5 80-3	Orange-Black Black	Proportioning switch for score and extra ball steps.
R1 N.C.	G-22	23-3 80-3	Blue-Yellow Black	Proportioning switch for score and extra ball steps.
SELECTOR LOCK TRIP COIL	A-9	98 70	Gray-Black Orange	Energized at 4th step of timer unit.
L1 N.O.	E-11	52-6 91-2	White-Blue Gray-Red	Completes circuit to energize extra ball play relay.
L2 N.C.	B-9	98 98	Gray-Black Gray-Black	Breaks circuit to this coil.
L3 N.O.	C-10	27-2 78-6	Blue-Orange Orange-Black	Completes circuit to timer step-up coil thru control unit cam switch #1A.
L4 N.C.	F-25	31 60-6	Yellow-Red Brown	Opens circuit to shift unit coils.
R1 N.O.	I-16	18-4 56-7	Red-Black White-Brown	Completes replay circuit when relay is tripped.
R2 N.C.	K-4	61-7 71-5	Brown-Red Orange-Red	Shuts off "turn knobs now" lite.
300 CORNERS TRIP COIL	A-30	57-2 70	White-Orange Orange	Energized by control unit cam switch #8C when circuit is complete thru all other factors.
L1 S.P.D.T.	E-17	53 71-3 14	White-Yellow Orange-Red Red-Green	Directs circuit to score 200 or 300 for corners replay scoring thru "open at 50" or "open at 75" switch.
L2 N.C.	B-30	57-2 57-2	White-Orange White-Orange	Breaks circuit to this coil.
L3 N.C.	D-27	21 56-5	Blue-Red White-Brown	Proportioning switch for "magic pocket feature" steps.
L4 S.P.D.T.	J-11	45 30 98-10	Green-White Yellow Gray-Black	Breaks circuit to 200 corners lite, and completes circuit to 300 corners lite.

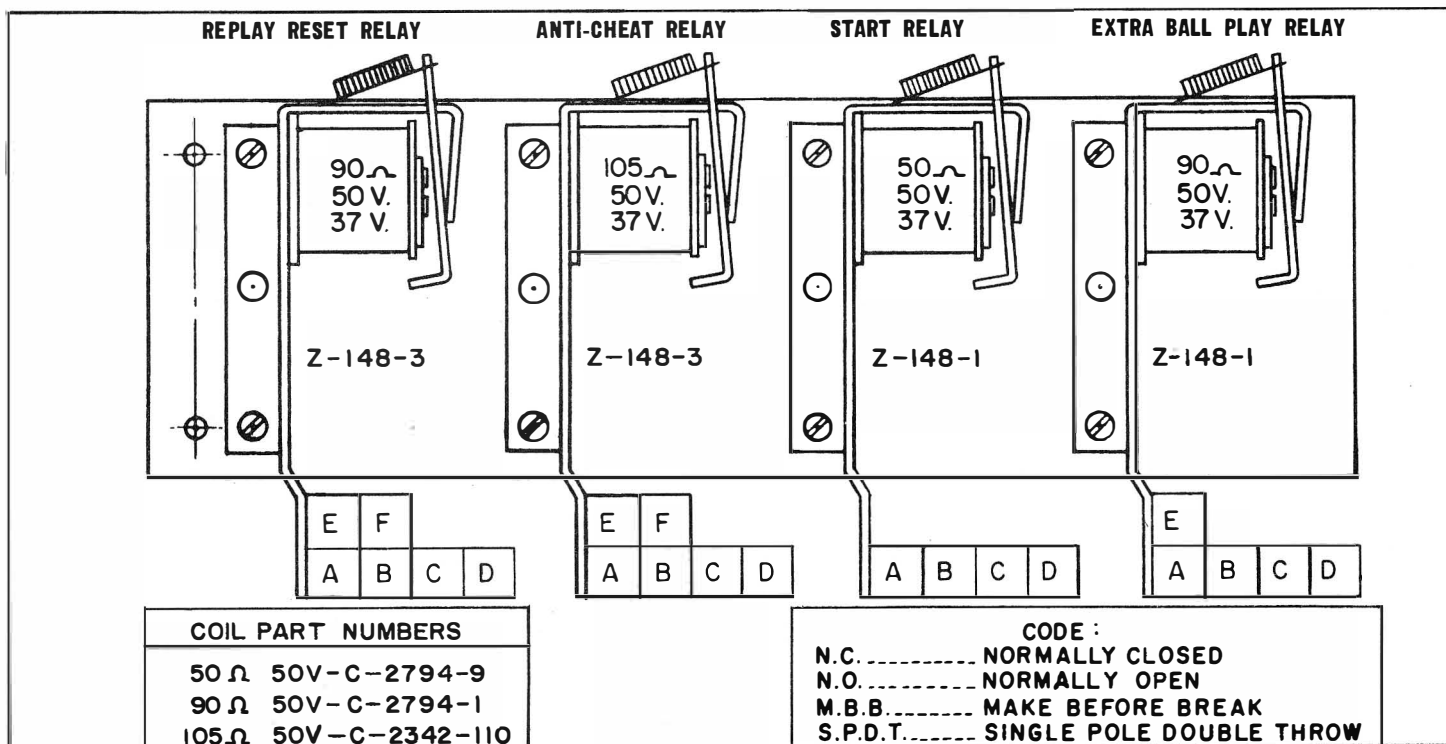
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TRIP RELAY BANK CHART — CONCLUDED

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE NO.	WIRE COLORS	FUNCTION OF SWITCHES
200 CORNERS TRIP COIL	A-29	90-6 70	Gray Orange	Energized by control unit cam switch #8C when circuit is complete thru all other factors.
L1 N.O.	J-10	18 45	Red-Black Green-White	Completes circuit to lite "200 corners" lite.
L2 N.C.	B-29	90-6 90-6	Gray Gray	Breaks circuit to this coil.
L3 N.O.	D-18	13-8 21-8	Red-Yellow Blue-Red	Completes circuit to "corner" replay counter step-up coil, when scoring "200 corners."
L4 N.C.	E-27	56-5 65	White-Brown Brown-White	Proportioning switch for "magic pocket feature" steps.
TILT TRIP COIL	A-12	14-5 70	Red-Green Orange	Energized by any tilt switch or plumb bob.
L1 S.P.D.T.	I-8	21-3 30 36-4	Blue-Red Yellow Yellow-Brown	Breaks circuit to ball counting, extra ball, replay and button circuits. Completes circuit to shutter motor when game tilted.
L2 N.C.	F-3	20-P 60-P	Blue (Plastic) Brown(Plastic)	Opens circuit to control unit and mixer unit motors, when game is tilted.
L3 N.C.	M-21	20-4 10	Blue Red	Opens 17 volt circuit.
L4 S.P.D.T.	M-19	38 81 41-9	Yellow-Black Black-Red Green-Red	Shuts off 6 volt circuit and lites tilt lite.
R1 N.C.	B-12	14-5 14-5	Red-Green Red-Green	Breaks circuit to this coil.

4 RELAY BANK PICTORIAL VIEW

NUMBERS CORRESPOND TO SWITCH CHART

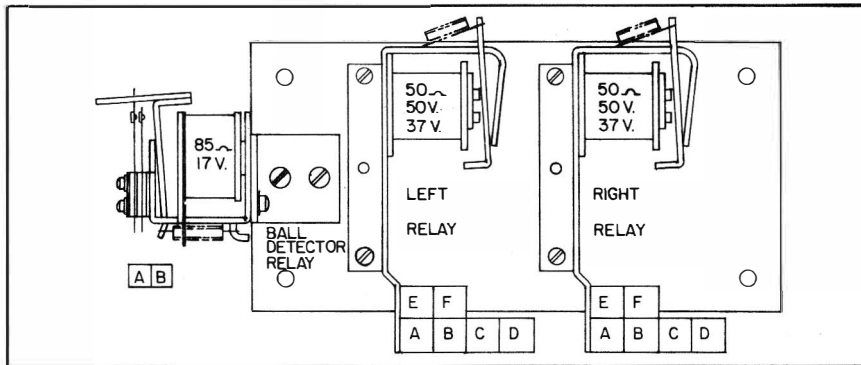


4 RELAY BANK SWITCH CHART FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
REPLAY RESET RELAY COIL	A-6	75-2 70	Orange-White Orange	Energizes when replays are cancelled by push button or if anti-cheat relay drops out.
A S.P.D.T.	D-5	27-4 13-9 53-2	Blue-Orange Red-Yellow White-Yellow	Directs circuit to replay meter during replay cancel.
B N.O.	G-2	20-P 60-P	Blue (Plastic) Brown (Plastic)	Energizes control unit motor.
C N.O.	F-5	56-2 75-2	White-Brown Orange-White	Lock-in switch for this relay.
D N.C.	C-6	21-6 63-2	Blue-Red Brown-Yellow	Opens start circuit during replay cancel.
E N.O.	B-5	61-5 41-6	Brown-Red Green-Red	In series with replay meter.
ANTI-CHEAT RELAY COIL	A-38	78-4 70	Orange-Black Orange	Energized thru cam switch #5C, its switches protect replay and light circuits.
A N.O.	M-19	54-7 38	White-Green Yellow-Black	Opens 6 volt circuit to lites, when this relay drops out.
B N.O.	L-20	20-4 80-1	Blue Black	Opens 17 volt circuit when this relay drops out.
C N.O.	B-38	10-6 78-4	Red Orange-Black	Lock-in switch for this relay.
D N.O.	B-11	13 93-6	Red-Yellow Gray-Yellow	Completes circuit to extra ball play relay.
E N.C.	G-6	56-2 75-2	White-Brown Orange-White	Energizes replay reset relay when this relay drops out.
F N.O.	H-6	56-2 50-2	White-Brown White	Completes circuit to start relay.
START RELAY COIL	A-6	21-6 70	Blue-Red Orange	Energizes every time a coin is played or when a red or yellow button is pressed.
A N.C.	F-28	81-6 14-8	Black-Red Red-Green	Opens circuit to game advantage circuits.
B N.C.	B-19	75-6 78	Orange-White Orange-Black	Opens circuit to extra ball step-up coil during spin of control unit.
C N.O.	E-9	85 36-2	Black-White Yellow-Brown	Completes circuit to timer cam index coil.
D N.O.	H-6	48-2 63-2	Green-Black Brown-Yellow	Lock-in switch for this relay.
EXTRA BALL PLAY RELAY COIL	A-11	93-6 70	Gray-Yellow Orange	Energizes when yellow button is pressed.
A S.P.D.T.	E-4	13-3 36-2 93-2	Red-Yellow Yellow-Brown Gray-Yellow	Directs circuit to shutter motor, or to mixer latch, and timer cams index coils during extra ball play.
B N.O.	J-20	21-4 30	Blue-Red Yellow	Lites extra ball lite on back glass.
C N.O.	I-11	21-3 31-7	Blue-Red Yellow-Red	Lock-in switch for this relay.
D N.O.	G-6	50-2 63-2	White Brown-Yellow	Energizes start relay during extra ball play.

3 RELAY BANK PICTORIAL VIEW

NUMBERS CORRESPOND TO SWITCH-CHART



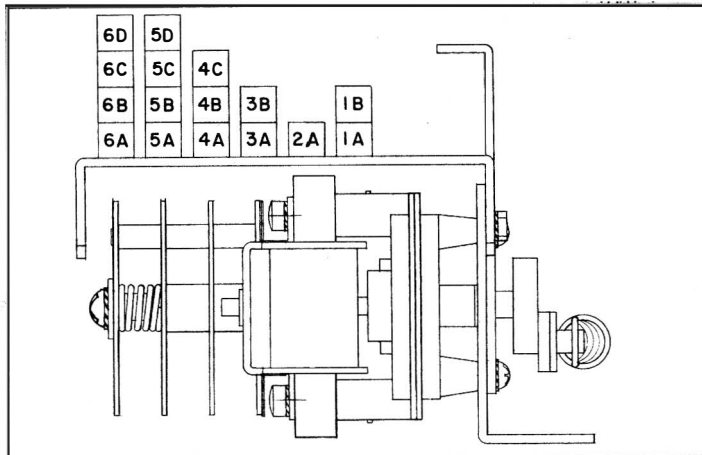
CODE	
N.C.	NORMALLY CLOSED
N.O.	NORMALLY OPEN
M.B.B.	MAKE BEFORE BREAK
S.P.D.T.	SINGLE POLE DOUBLE THROW

3 RELAY BANK SWITCH CHART FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
BALL DETECTION RELAY COIL	M-33	10 91-5	Red Gray-Red	Energized by panel hole switches #1, #2, #3, #4, #5, #6 and #7.
A N.O.	F-32	51-2 80-5	White-Red Black	Completes circuit to "move left" and "move right" relays.
B N.O.	D-34	30 74-4	Yellow Orange-Green	Completes circuit to "move right" relay when starting a new game.
LEFT RELAY COIL	A-32	41-3 70	Green-Red Orange	Energized by "move left" button switch on front of game.
A N.C.	G-33	90-4 40-3	Gray Green	Completes circuit to bring pocket pulse index cams to correct index position.
B N.O.	F-34	10-2 13-2	Red Red-Yellow	Completes circuit to "pocket pulse" index coil.
C N.O.	C-32	81-7 18-2	Black-Red Red-Black	Completes lock-in circuit for "move left" relay.
D N.O.	H-1	30-P 20-P	Yellow (Plastic) Blue (Plastic)	Completes circuit to "move left" solenoid.
E N.C.	C-33	83-7 75	Black-Yellow Orange-White	Breaks circuit to "move right" relay.
F N.O.	I-27	98-4 60-4	Gray-Black Brown	Completes circuit to #2 booster coil.
RIGHT RELAY COIL	A-33	75 70	Orange-White Orange	Energized by "move right" button switch on front of game.
A N.C.	F-33	10-2 40-3	Red Green	Completes circuit to bring pocket pulse index cams to correct index position.
B N.O.	G-34	10-2 13-2	Red Red-Yellow	Completes circuit to "pocket pulse" index coil.
C N.O.	C-33	83 18	Black-Yellow Red-Black	Completes lock-in circuit to "move right" relay.
D N.O.	G-2	80-P 20-P	Black (Plastic) Blue (Plastic)	Completes circuit to "move right" solenoid.
E N.C.	B-32	81-7 41-3	Black-Red Green-Red	Breaks circuit to "move left" relay.
F N.O.	I-26	60-4 91-4	Brown Gray-Red	Completes circuit to #6 booster coil.

SHUTTER MOTOR PICTORIAL VIEW

NUMBERS CORRESPOND TO SWITCH CHART



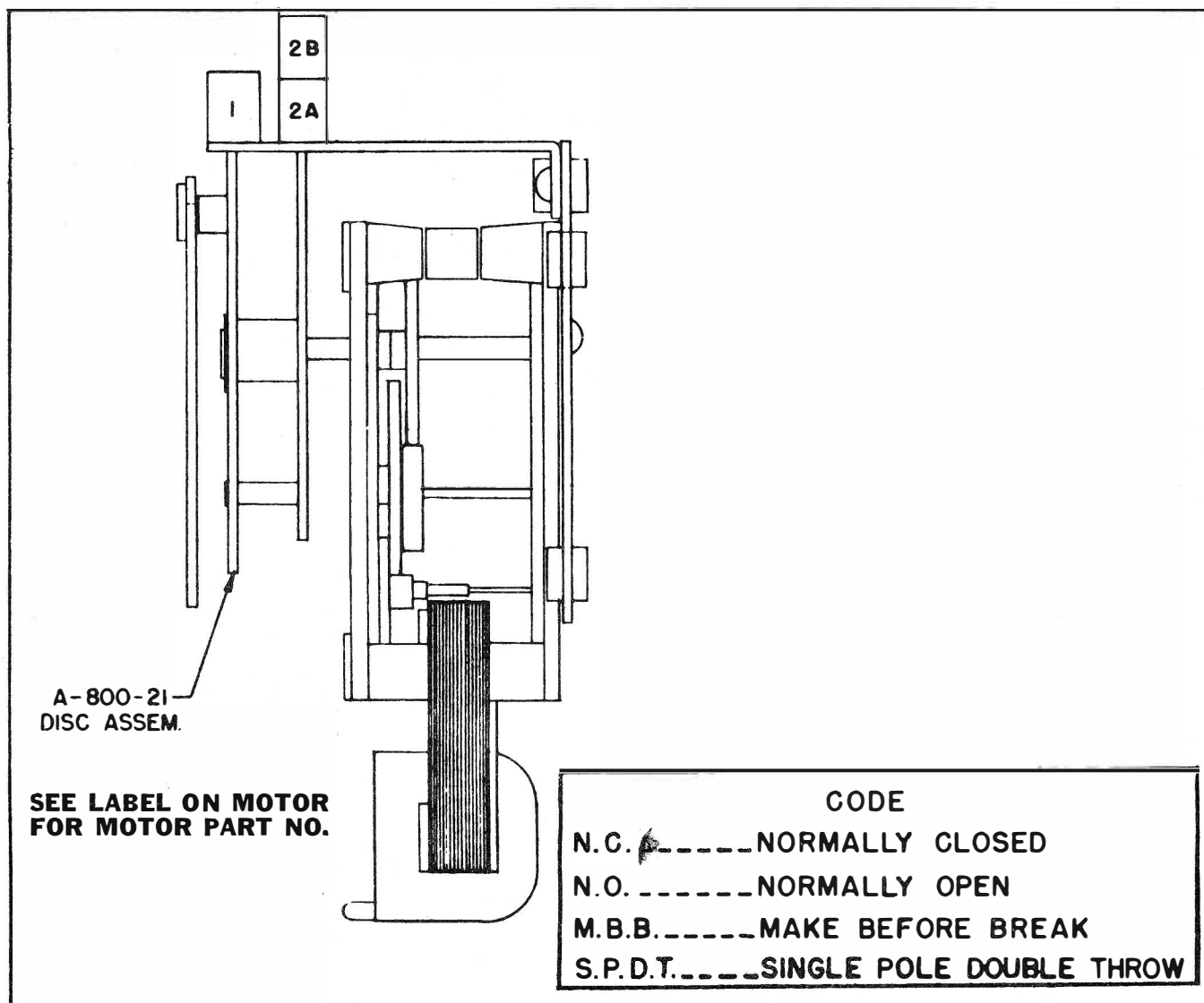
SEE LABEL ON MOTOR FOR MOTOR PART NO.

CODE

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

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

CAM SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
1A N. C.	I-14	93 21-3	Gray-Yellow Blue-Red	Completes circuit to replay scoring circuit.
1B N. O.	F-8	30 14-3	Yellow Red-Green	Carry thru for shutter motor.
2A N. C.	F-13	31-3 36-3	Yellow-Red Yellow-Brown	Completes circuit to ball lifter motor (closed normally) open during shutter cycle.
3A N. O.	E-25	30 63	Yellow Brown-Yellow	Completes circuit to 2nd row shift latch coil.
3B N. O.	H-3	20-P 70-P	Blue (Plastic) Orange (Plastic)	Resets trip relay bank.
4A N. O.	F-8	18-3 14-3	Red-Black Red-Green	(Closed when shutter is open) Completes circuit to shutter motor.
4B N. C.	G-24	21-3 60-6	Blue-Red Brown	Opens circuit to left and right button switches, and all 3 magic line shift units when shutter is open.
4C N. O.	H-8	36-4 18-3	Yellow-Brown Red-Black	Starts shutter motor if game is tilted when shutter is open.
5A N. O.	H-18	30 31-5	Yellow Yellow-Red	Completes circuit to step corners replay counter to reset position.
5E N. C.	H-10	21-3 65-2	Blue-Red Brown-White	Safety switch for timer reset.
5C S.P.D.T.	D-9	14-3 13-3 93-2	Red-Green Red-Yellow Gray-Yellow	Breaks circuit to shutter motor and makes circuit to timer index coil.
6A N. O.	E-24	30 52	Yellow White-Blue	Completes circuit to 1st row shift latch coil.
6B N. O.	G-9	30 71-9	Yellow Orange-Red	Completes circuit to timer reset coil.
6C N. O.	E-26	30 98-6	Yellow Gray-Black	Completes circuit to 3rd row shift latch coil.
6D N. O.	C-38	30 85-5	Yellow Black-White	Resets score, replay counter, and extra ball units.



BALL LIFT MOTOR PICTORIAL VIEW

NUMBERS CORRESPOND TO SWITCH CHART BELOW

CAM SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCH
1 N.O.	G-14	30 91-1	Yellow Grey-Red	Carry-over switch for ball lifter motor.
2A N.O.	E-10	43-2 27-2	Green-Yellow Blue-Orange	Energizes timer unit step-up coil.
2B N.O.	D-9	30 98-3	Yellow Gray-Black	Completes circuit to selector lock trip relay.