

# Bally<sup>®</sup>

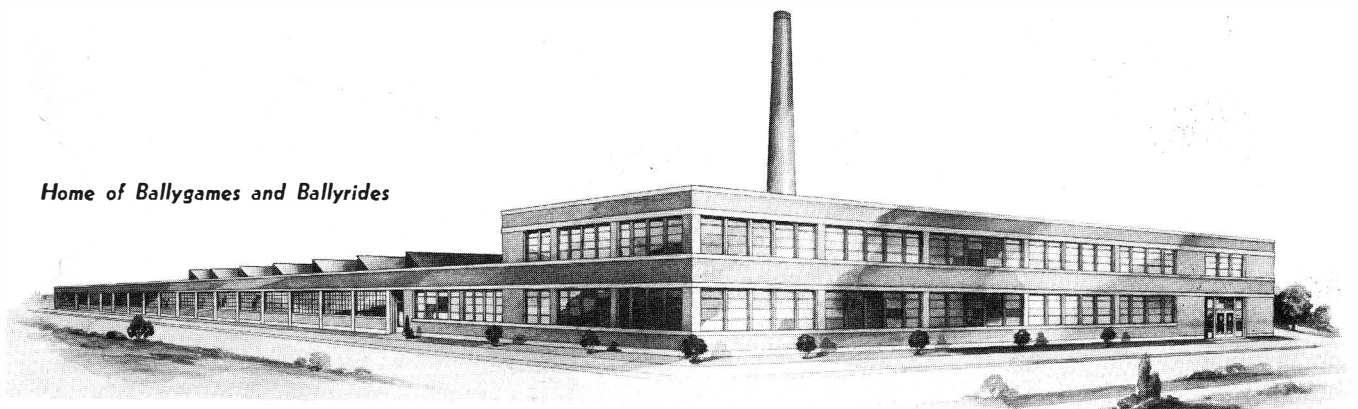
# Key West

## OPERATING INSTRUCTIONS AND PARTS CATALOG

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

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

*Home of Ballygames and Ballyrides*



Thru wipers (A), completes circuit to flash "select now" lite at 4th step (Diag. K-1)

Thru wiper (B) timer step-up circuit. (Diag. H-8)

Feed for wipers (B) & (C)

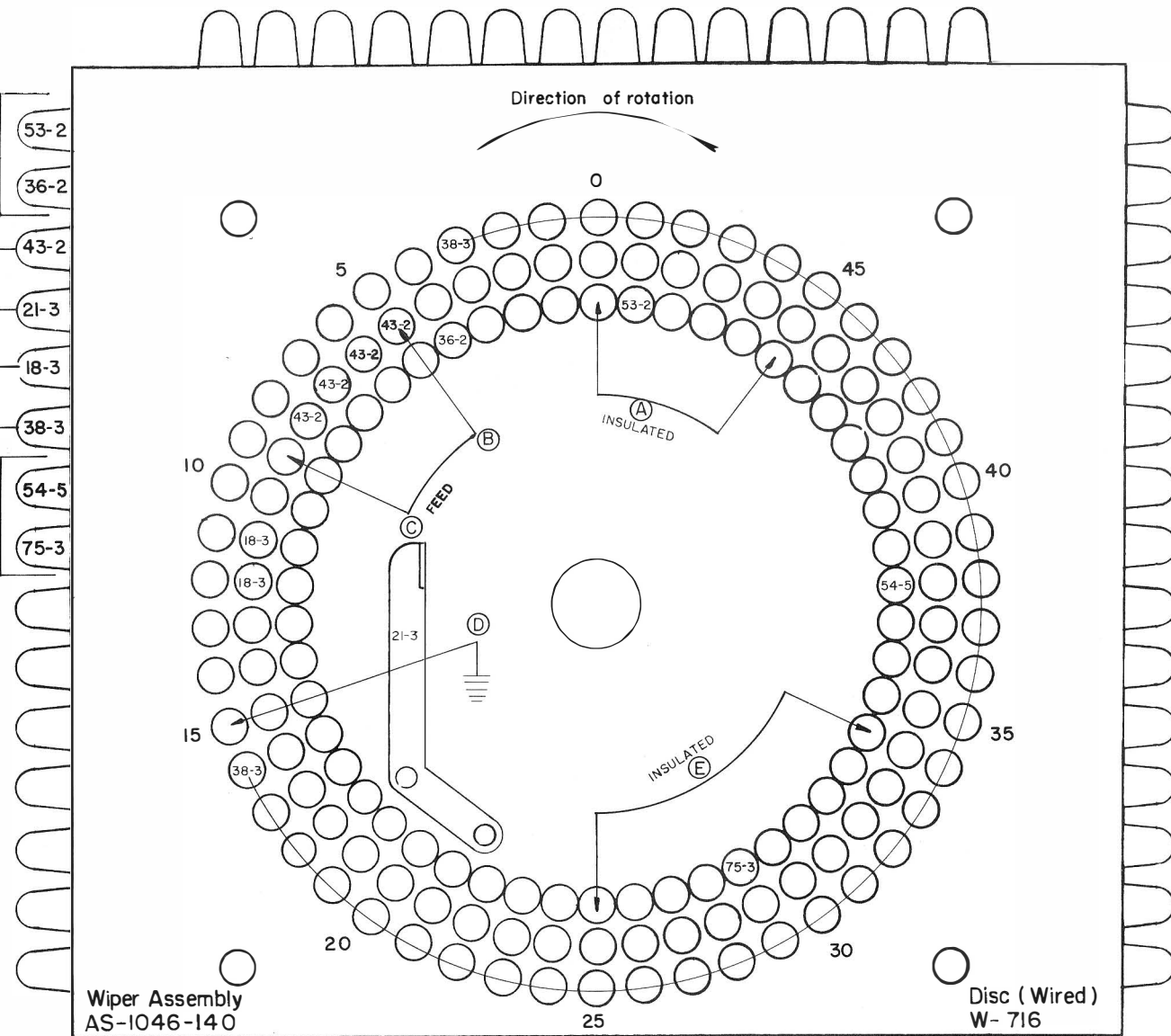
Thru wiper (C), closes shutter at 2nd step. (Diag. H-8)

Thru wiper (D), completes circuit to ball lifter motor from 1st to 39th step, when 8th ball switch opens (Diag. E-12)

Thru wipers (E), completes circuit to selector lock relay at 4th step. (Diag. B-9)

Ground to frame of unit

91-1



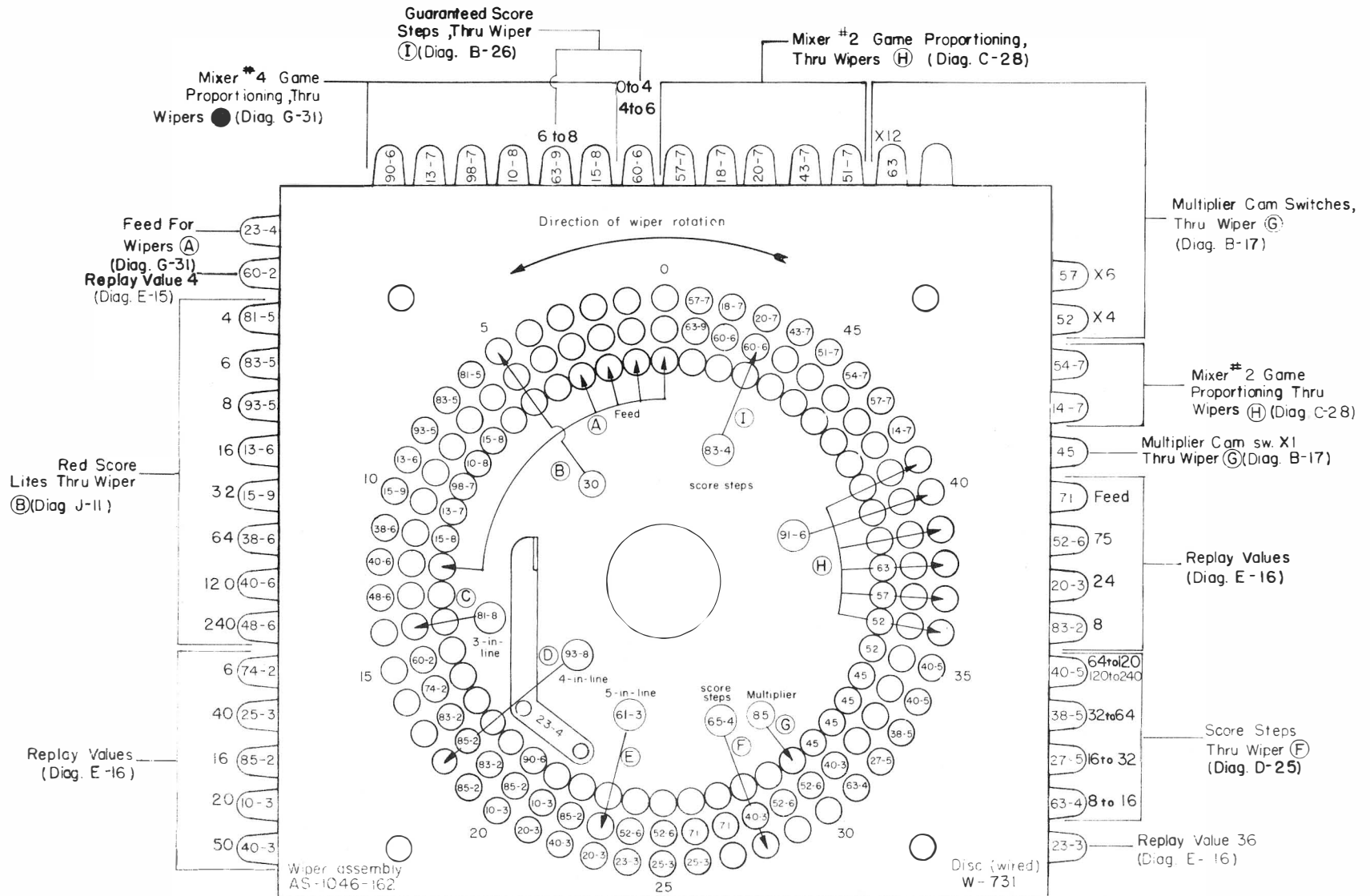
Wiper Assembly  
AS-1046-140

Disc (Wired)  
W-716

- COMPLETE UNIT -AS-1110-22
- RESET COIL -28-R-15
- STEP-UP COIL -25-GG-7
- STEP-UP PLUNGER-S-496-100
- STEP-UP ARM-A-1765
- RATCHET & SHAFT-1050-39-21

# RED SCORE UNIT viewed from BUTTON or WIPER side

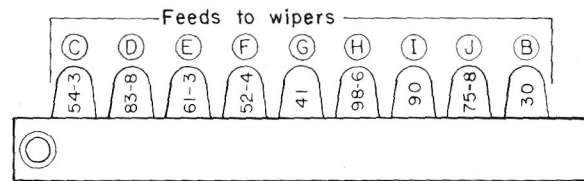
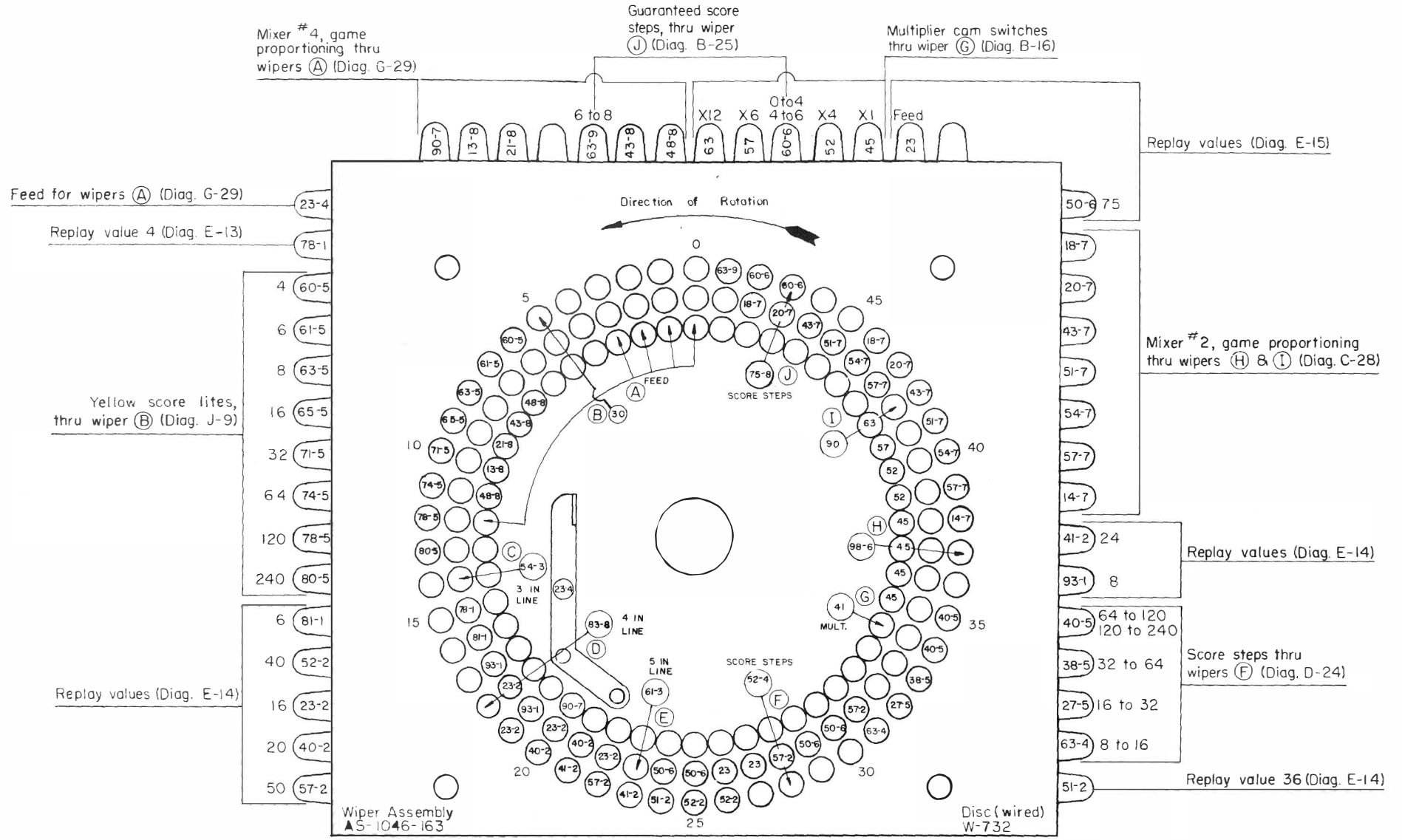
8 step unit. Wipers shown in zero or reset position



- Complete unit - AS-1022-27
- Reset coil - 28-R-15
- Step-up coil - 25-GG-7
- Step-up plunger - S-496-100
- Step-up arm - A-1765-3
- Ratchet & shaft - C-1050-8-39

# YELLOW SCORE UNIT viewed from BUTTON or WIPER side

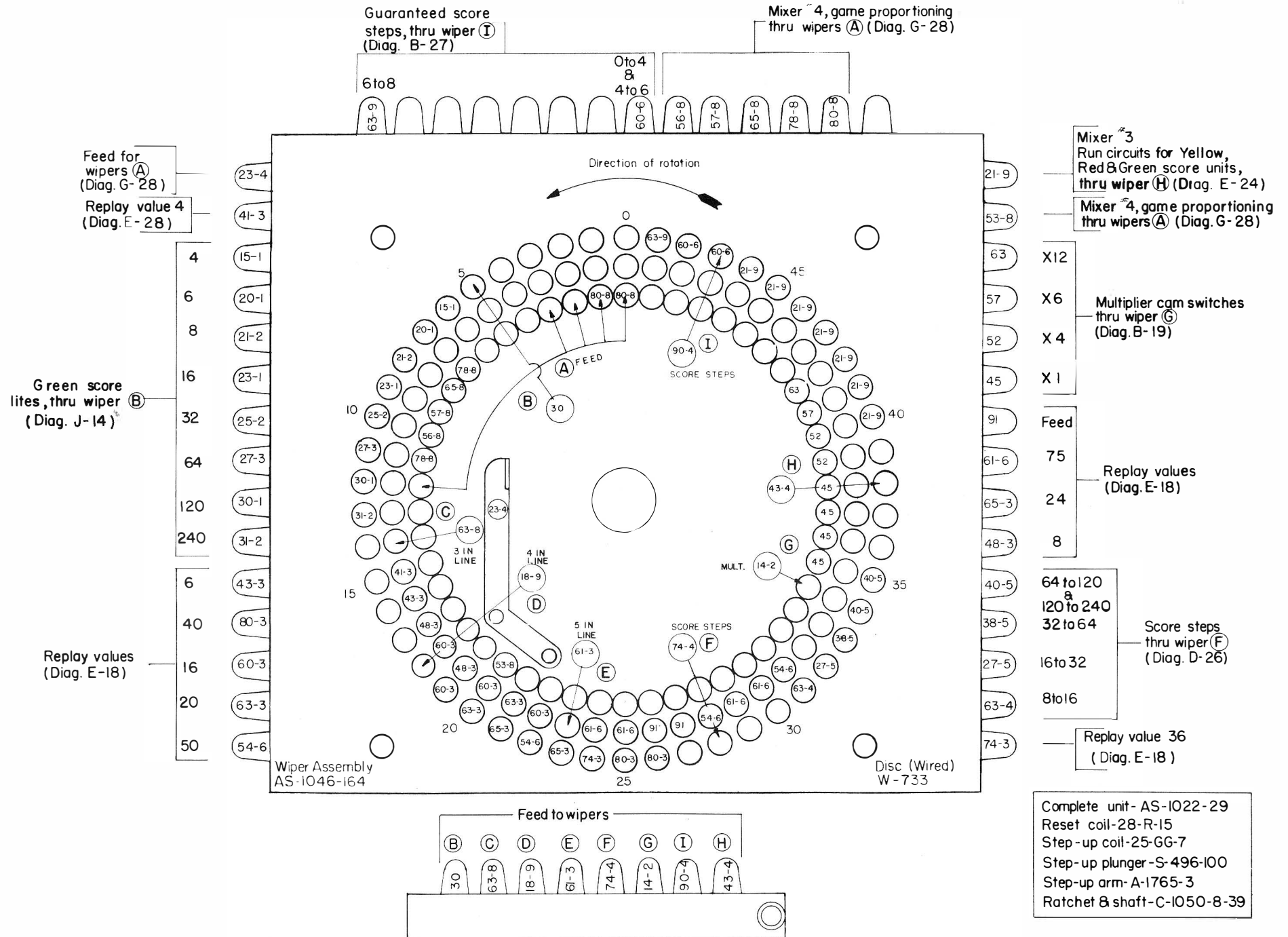
8 step unit. Wipers shown in zero or reset position



- Complete unit - AS-1022-28
- Reset coil - 28-R-15
- Step-up coil - 25-GG-7
- Step-up plunger - S-496-100
- Step-up arm - A-1765-3
- Ratchet & shaft - C-1050-8-39

# GREEN SCORE UNIT viewed from BUTTON or WIPER side

8 step unit. Wipers shown in zero or reset position



**EXTRA BALL UNIT** viewed from **BUTTON** or **WIPER** side

10 step unit. Wipers shown in zero or reset position

Extra ball runs. Thru wipers (C) & (E) (Diag. C-20)      Extra ball lites. Thru wipers (A) & (B) (Diag. J-18)      Feeds wipers (A) & (B) for lite circuits (Diag. J-18)

Feeds wipers (C), (E) & (I) for extra ball runs (Diag. C-20)

Feeds wipers (F), (G) & (H) for single steps (Diag. C-21)

Single steps thru wipers (F), (G) & (H) (Diag. C-21)

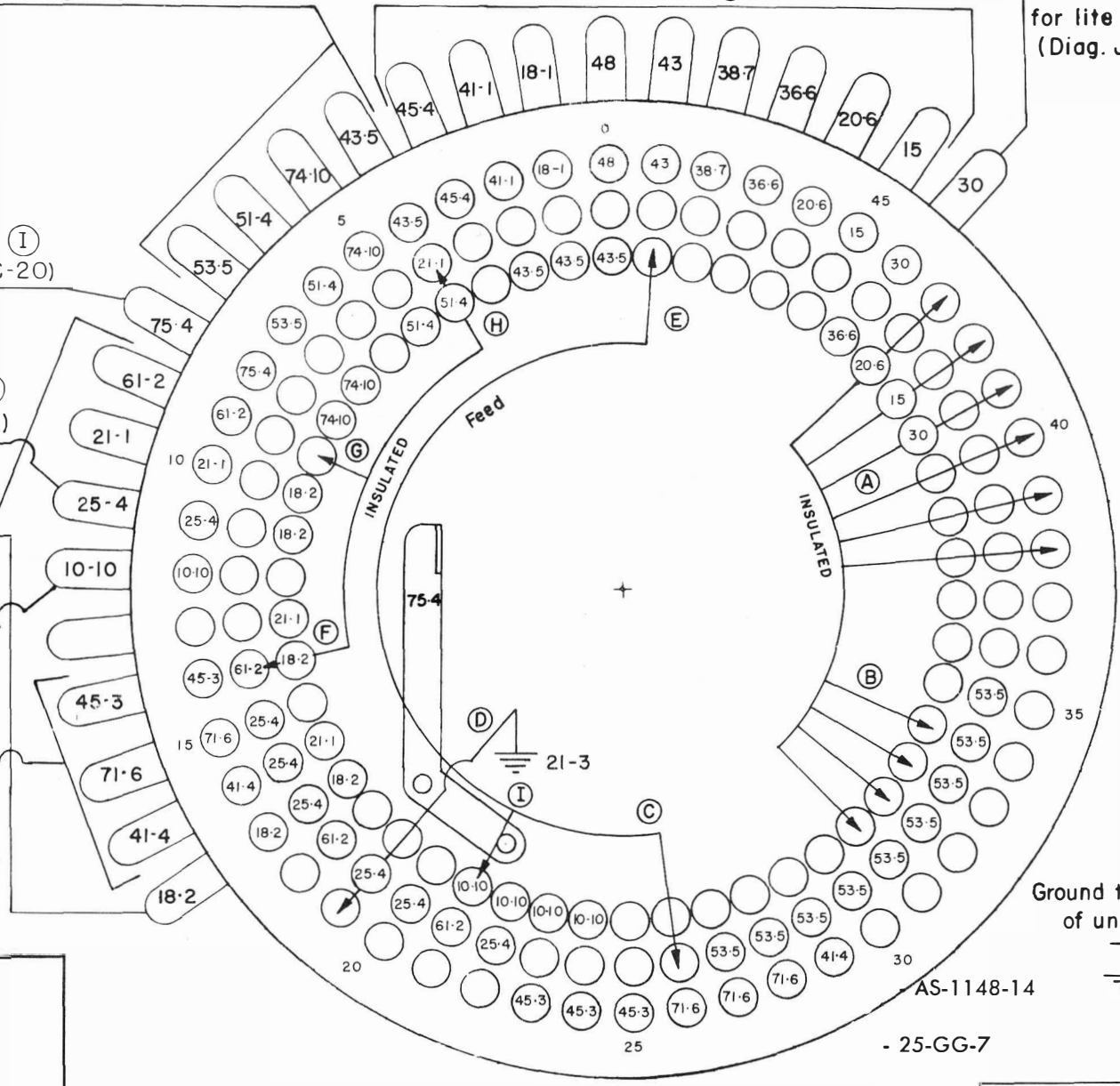
1<sup>st</sup> extra ball when No.16 special pocket is hit thru wiper (I) (Diag. C-19)

Extra ball count circuit to ball trough switches No 3, No 2 & No 1 Thru wiper (D) (Diag. H-12)

- Complete Unit
- Reset Coil - 28-R-15
- Step-up Coil
- Step-up Plunger - S-496-100
- Step-up Arm - A-1765
- Ratchet & Shaft - C-1050-10

**WIPER ASSEMBLY**  
AS-1046-142

**DISC (WIRED)**  
W-668

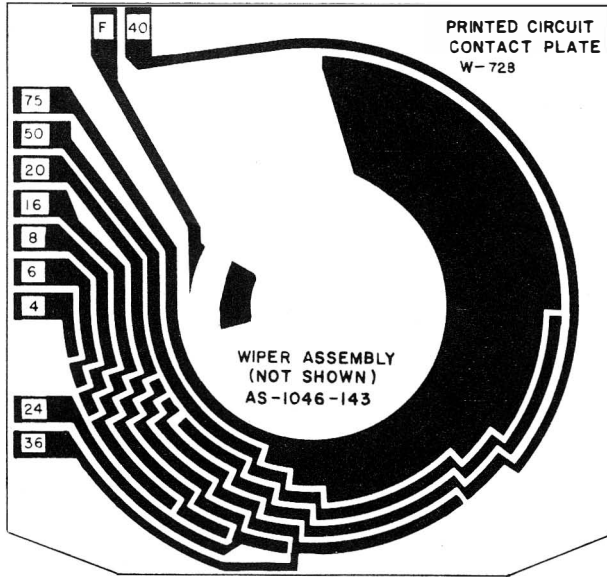


Direction of rotation

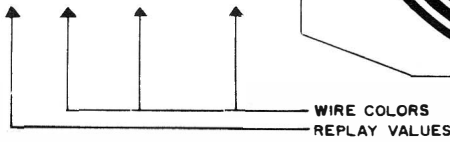


# REPLAY COUNTER viewed from WIPER side 3 used (see code box at left)

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 -  
 Reset Coil  
 Step-up Coil -  
 Step-up Plunger - S-496-116  
 Step-up Arm - A-1765  
 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
<b>5 IN LINE</b>	75 	75 	96 	96 	200 	300 	450 	600 
<b>4 IN LINE</b>	16 	20 	24 	50 	96 	144 	240 	480 
<b>3 IN LINE</b>	4 	6 	8 	16 	32 	64 	120 	192 

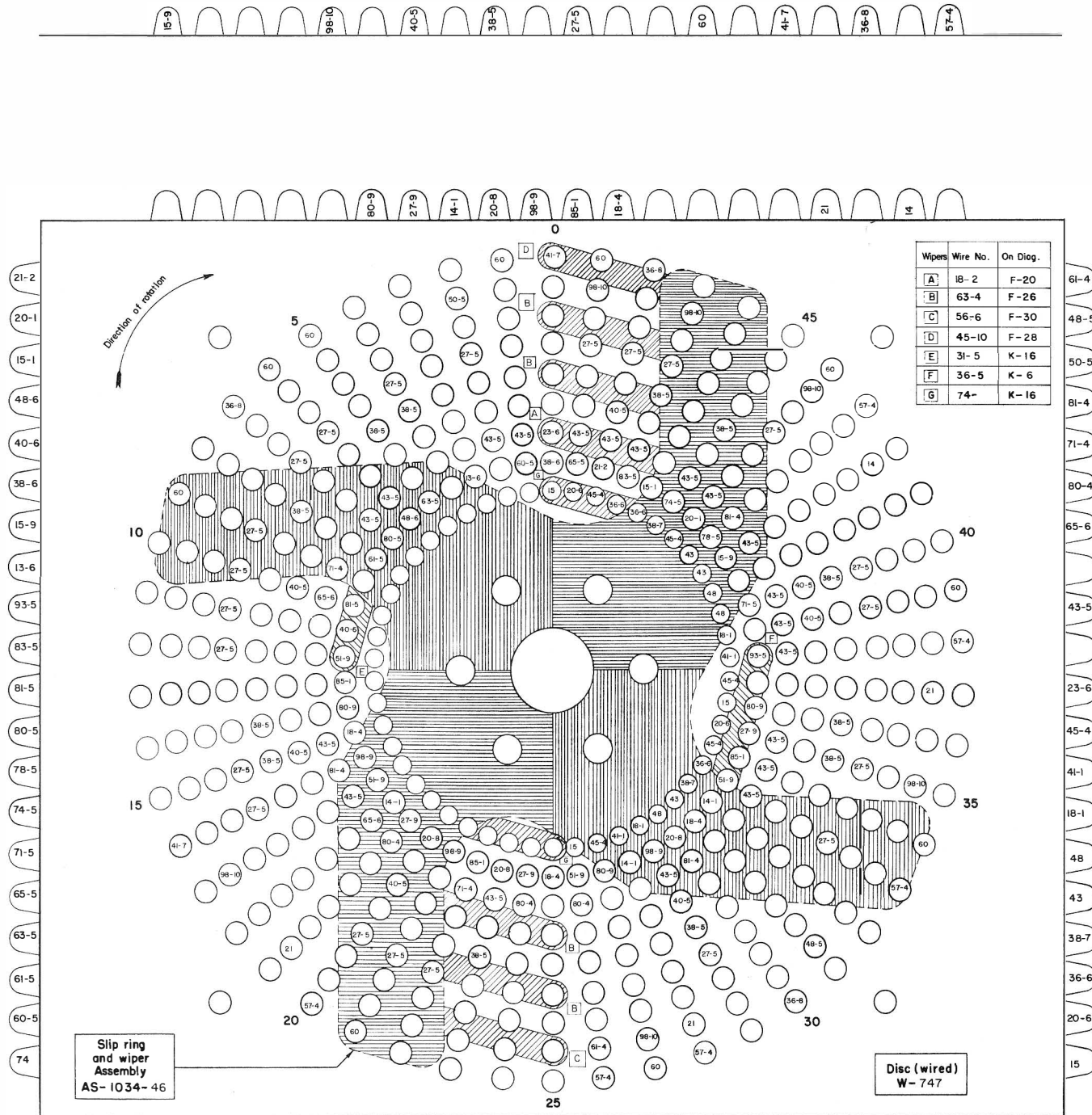
LARGE NUMBERS ARE REPLAY SCORES SHOWN ON BACK GLASS.  
 NUMBERS IN SHADED CIRCLES INDICATE WHICH PORTION OF REPLAY CIRCUIT STRIP IS EFFECTIVE FOR A PARTICULAR REPLAY SCORE.

EXAMPLE: ON A 3-IN-LINE SCORE OF 64 REPLAYS THE CIRCUIT IS EFFECTIVE THRU THE REPLAY CIRCUIT STRIP

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

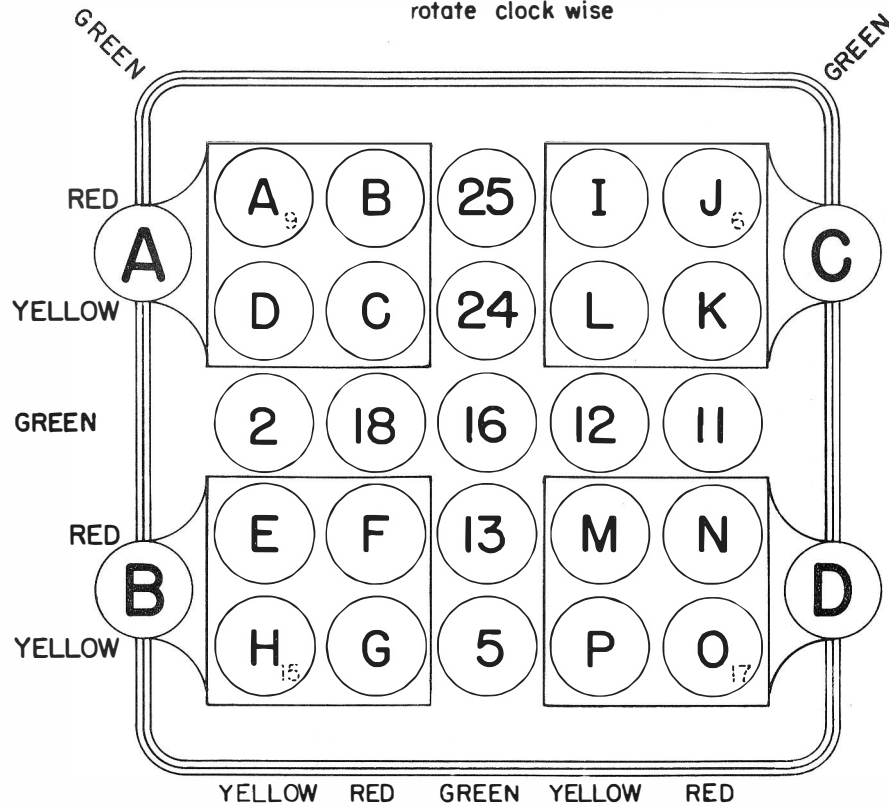


# SPOTTING DISC viewed from BUTTON or WIPER side



# CARD LAYOUT NEUTRAL POSITION

Magic squares  
rotate clock wise



## SEARCH POSITIONS

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

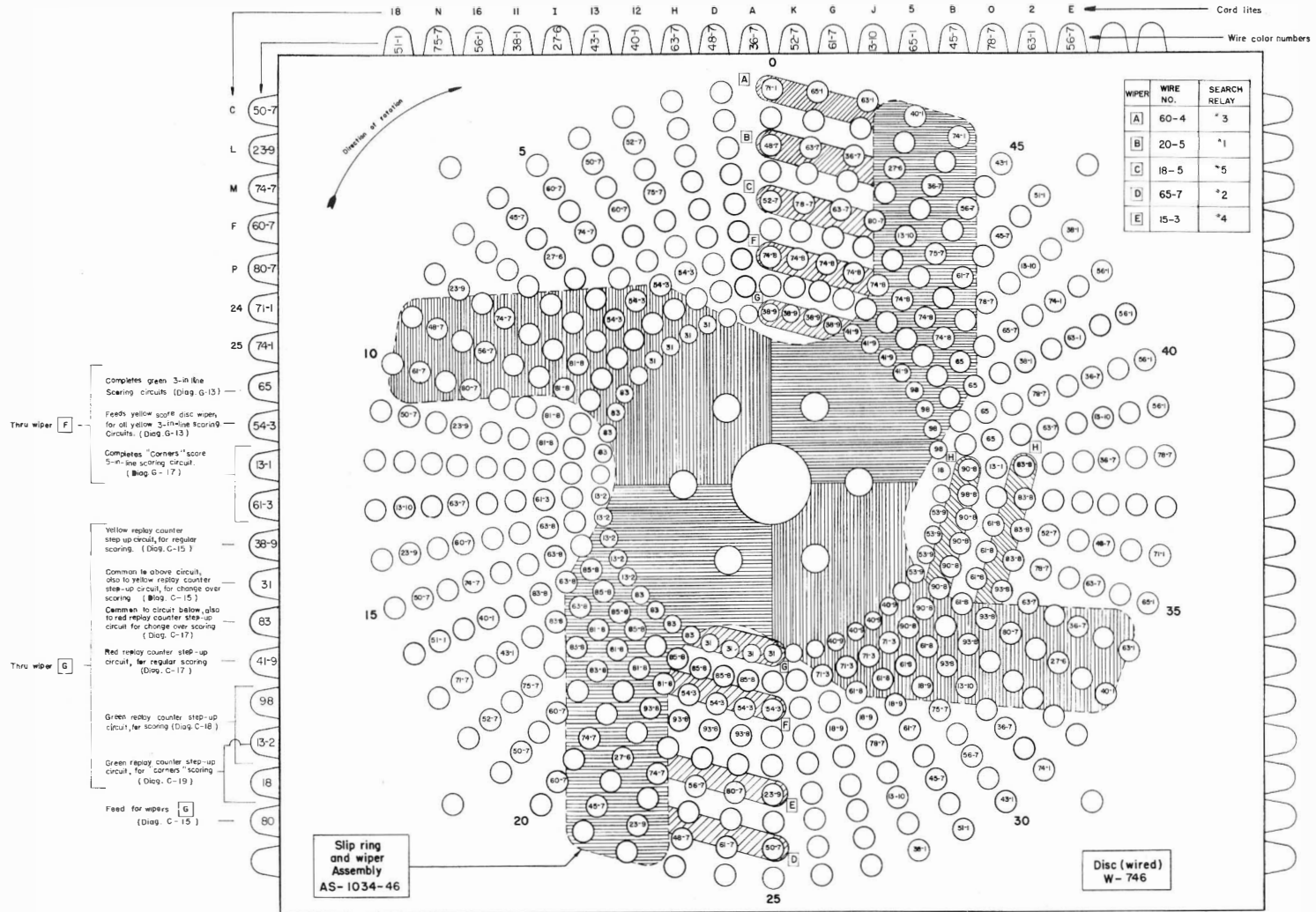
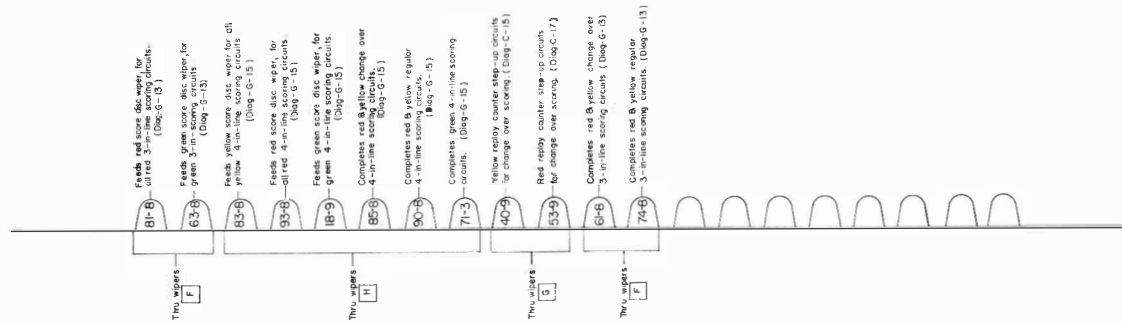
Rotation of Search Disc wipers  
From 50 to 1



RED  
YELLOW  
GREEN  
RED  
YELLOW

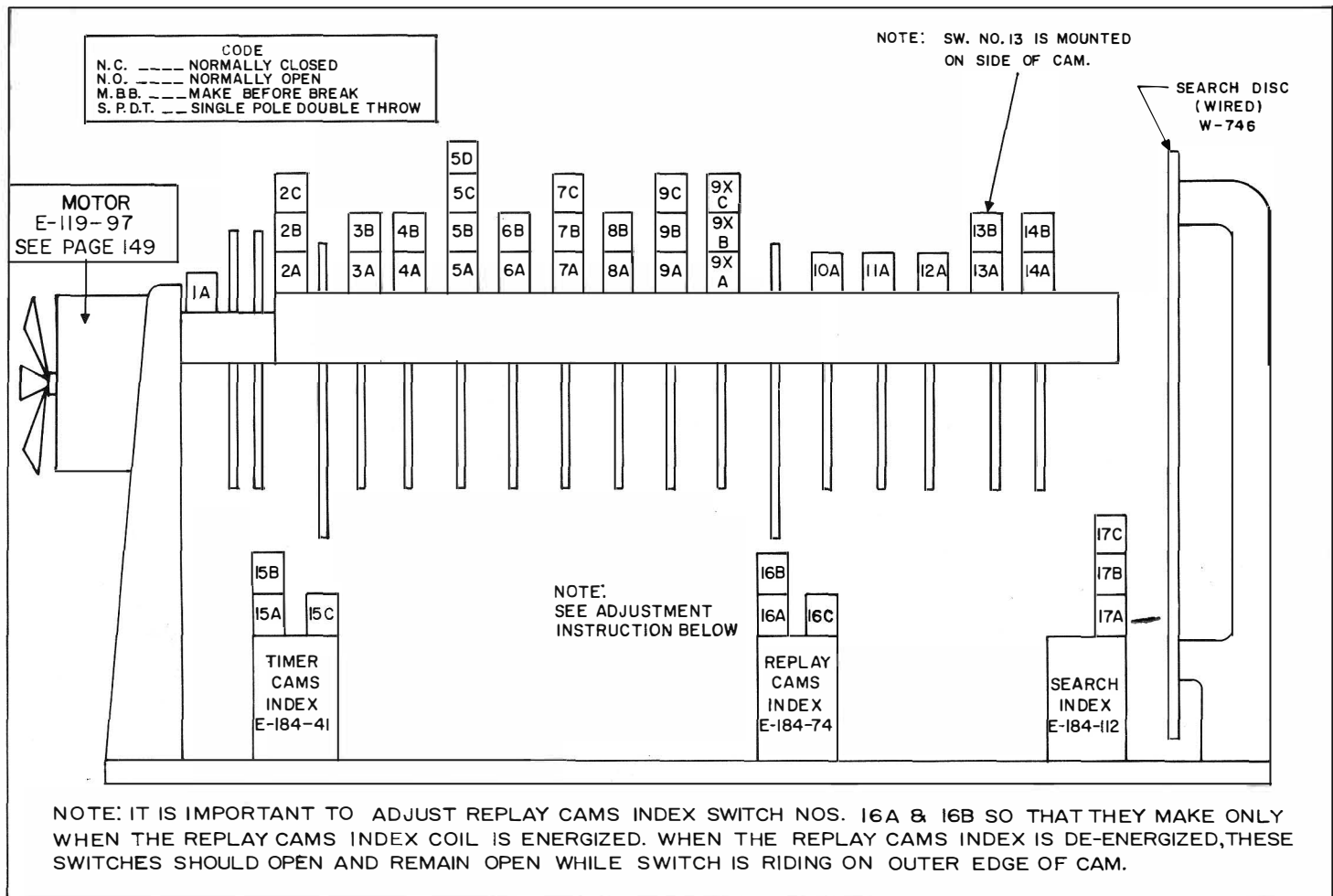
# SEARCH DISC viewed from BUTTON or WIPER side

Note:  
 Regular Scoring / Red winner scores red.  
 / Yellow winner scores yellow.  
 Change-Over Scoring / Red winner scores yellow.  
 / Yellow winner scores red.



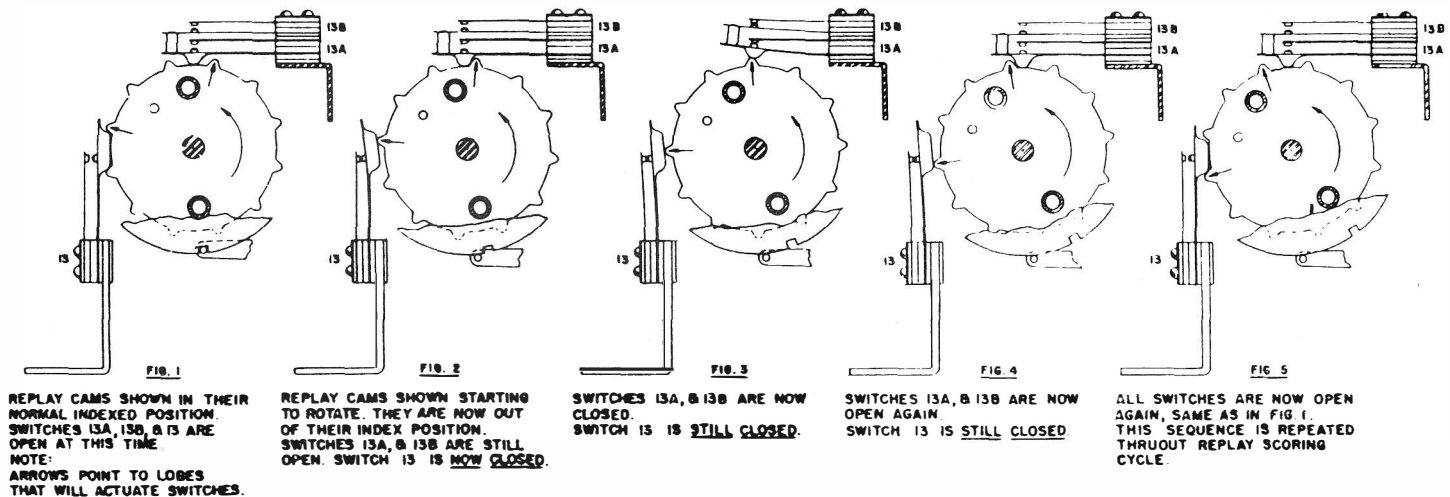
# CONTROL UNIT PICTORIAL VIEW

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 CAM SWITCH CHART

FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW

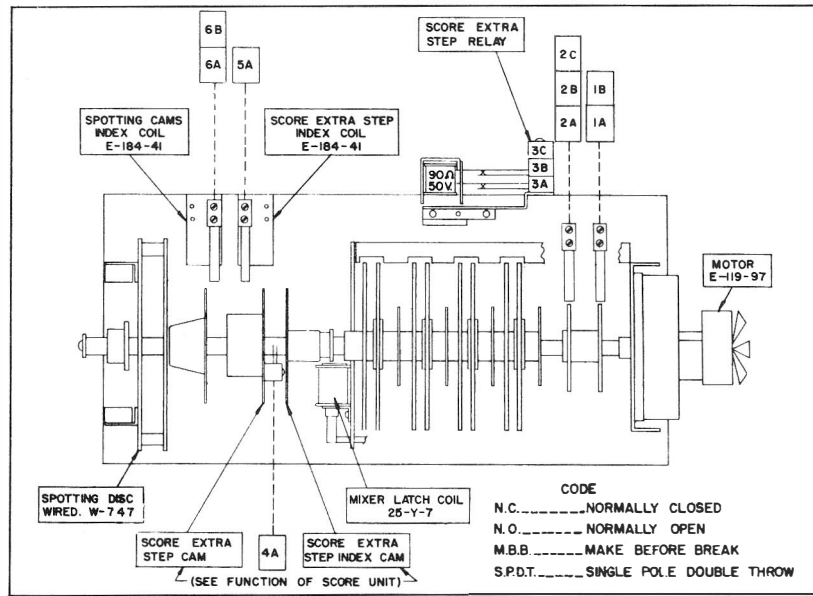
CAM SWITCH		LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
1A	N. O.	F-8	65-2 36-9	Brown-White Yellow-Brown	Energizes timer step-up coil, when drag arm switch, selector lock relay switch and cam switch #14B are closed.
2A	N. O.	I-3	90-5 30	Gray Yellow	Energizes reflex play magnet, and replay register reset. Also pulses total plays meter.
2B	N. O.	C-37	93-4 30	Gray-Yellow Yellow	Energizes coin kicker magnet.
2C	N. C.	E-9	31-7 57-6	Yellow-Red White-Orange	Drops out red button relay.
3A	N. C.	I-4	83-3 48-2	Black-Yellow Green-Black	Drops out start relay and sets as safety switch during spin.
3B	S. P. D. T.	B-14	93-7 98-4 91-7	Gray-Yellow Gray-Black Gray-Red	Directs circuit to replay meter or total plays meter.
4A	N. O.	C-39	98-1 30	Gray-Black Yellow	Energizes spotting cams index coil.
4B	N. O.	C-5	14-9 80-2	Red-Green Black	Used if coin meter is added in front cabinet.
5A	N. O.	G-8	65-2 71-8	Brown-White Orange-Red	Energizes timer reset coil.
5B	N. O.	B-21	38-4 21-1	Yellow-Black Blue-Red	Energizes extra ball unit step-up coil. Steps unit from minus one position to zero position.
5C	N. O.	D-22	78-4 85-4	Orange-Black Black-White	Energizes anti-cheat relay.
6A	N. C.	H-26	51-5 75-5	White-Red Orange-White	Opens game advantage circuits during spin.
6B	N. O.	C-39	25-9 30	Blue-White Yellow	Energizes score extra step index coil.
7A	N. O.	E-22	60-6 85-4	Brown Black-White	Guaranteed step circuit for Yellow, Red, Green score units.
7B	N. O.	F-25	52-9 63-4	White-Blue Brown-Yellow	Yellow, Red, Green score unit steps.
7C	N. O.	C-37	93-4 30	Gray-Yellow Yellow	Safety switch for coin kicker magnet.
8A	N. O.	G-26	14-8 56-6	Red-Green White-Brown	Single magic squares unit steps. Also energizes corners, Bally-Hole, Select-A-Score, and Rollover trip relays.
8B	N. O.	B-21	25-4 38-4	Blue-White Yellow-Black	Extra ball unit steps.
9A	Alt.	G-37	71-7 81-7	Orange-Red Black-Red	Circuit to energize Red or Yellow relay.
9B	Alt.	D-29	90 91-6	Gray Gray-Red	Proportioning circuit (Spot #2 or #18).
9C	Alt.	H-34	36-10 21-10 25-10	Yellow-Brown Blue-Red Blue-White	Circuit to energize "Select After Shooting 5th Ball" trip relay.
9XA	Alt.	D-21	43-5 74-10	Green-Yellow Orange-Green	Proportioning circuit (Extra ball steps).
9XB	Alt.	H-24	15-7 41-8	Red-White Green-Red	Proportioning circuit (score and extra ball steps).
9XC	Alt.	L-2	10-9 27-9 20-2	Red Blue-Orange Blue	Completes circuit to Red or Yellow Rollover Lite.

CONCLUDED ON NEXT PAGE

## CONTROL UNIT CAM SWITCH CHART — CONCLUDED

CAM SWITCH		LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
10A	N. O.	A-17	63 70	Brown-Yellow Orange	Pulses replay counters when score units are at 8th step.
11A	N. O.	A-16	57 70	White-Orange Orange	Pulses replay counters when score units are at 7th step.
12A	N. O.	A-16	52 70	White-Blue Orange	Pulses replay counters when score units are at 5th and 6th steps.
13A	N. O.	A-15	45 70	Green-White Orange	Pulses replay counters when score units are at 1st, 2nd, 3rd, and 4th steps.
13B	N. O.	C-13	48-4 80	Green-Black Black	Pulses replay register step-up coil, and reflex replay magnet.
13 (Backside)	N. O.	H-13	21-3 27	Blue-Red Blue-Orange	Replay lock-in switch. NOTE: See control unit pictorial view.
14A	N. C.	I-14	56-7 93	White-Brown Gray-Yellow	Prevent the start of another replay scoring, when unit cams are indexed.
14B	N. C.	B-8	27-2 90-2	Blue-Orange Gray	Opens circuit to timer step-up coil, during replay winner.
TIMER CAMS INDEX COIL		B-6	15-5 93-2	Red-White Gray-Yellow	Energized by switch on start relay. Also thru shutter motor cam switch #5D.
15A	N. O.	G-1	20-P 60-P	Blue (Plastic) Brown(Plastic)	Operates control unit, mixer and spotting unit, and magic squares unit motors.
15B	N. C.	G-5	14-9 71-2	Red-Green Orange-Red	Opens circuit to coin lockout magnet during spin.
15C	N. C.	D-10	13 30	Red-Yellow Yellow	Lock in safety switch for red button 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-13	27 80	Blue-Orange Black	In series with replay lock in circuit. NOTE: See control unit pictorial view for correct adj.
16B	N. O.	I-14	56-7 93	White-Brown Gray-Yellow	In series with replay winner circuit. NOTE: See control unit pictorial view for correct adj.
16C	N. C.	C-12	15-7 80	Red-White Black	Opens direct 50 volt circuit to search index coil, coil then held in thru resistor.
SEARCH INDEX COIL		A-12	15-7 70	Red-White Orange	Energizes when 3-in-line or more is scored.
17A	N. O.	L-34	10 78-10	Red Orange-Black	Completes circuit to energize #3 search relay.
17B	N. O.	C-13	40-4 80	Green Black	Energizes replay cams index if a score is made.
17C	N. C.	I-4	83-3 30	Black-Yellow Yellow	Opens start circuit and also acts as safety switch.
17D	S. P. D. T.	G-34	61 38-10 23-10	Brown-Red Yellow-Black Blue-Yellow	Breaks "Magic Squares Buttons" circuit, and completes change lines button relay lock-in circuit.

# MIXER AND SPOTTING UNIT ASSEMBLY NUMBERS CORRESPOND TO SWITCH CHART BELOW

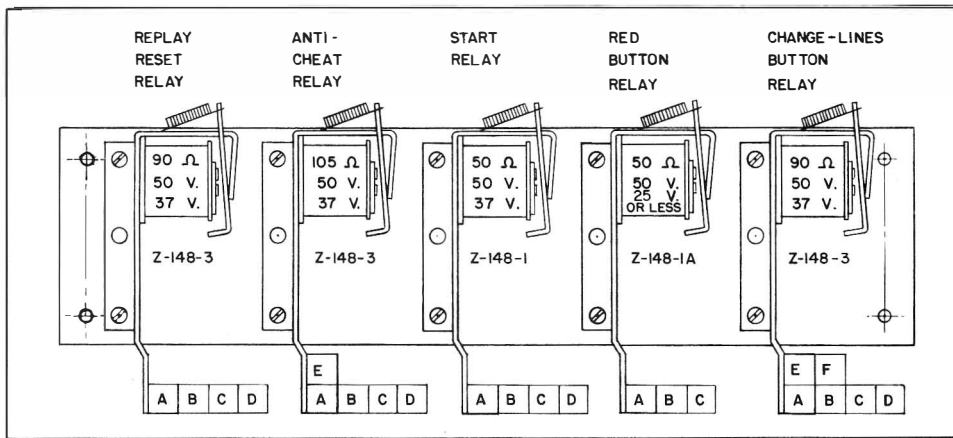


## MIXER AND SPOTTING UNIT CAM SWITCH CHART

FOR POSITION OF SWITCHES  
 REFER TO PICTORIAL VIEW ABOVE

CAM SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
1A	N. O.	G-26	14-8 45-10 Red-Green Green-White	Pulses magic squares unit step-up coil for multiple steps.
1B	N. O.	L-1	78-2 53-2 Orange-Black White-Yellow	Flashes "select now" lite.
2A	N. O.	D-3	75-2 53-7 Orange-White White-Yellow	Pulses replay register reset coil.
2B	N. O.	B-20	78 38-4 Orange-Black Yellow-Black	Pulses extra ball step-up coil for multiple steps.
2C	N. O.	L-1	41-10 60-8 Green-Yellow Brown	Flashes "Select After Shooting 5th Ball" Lite.
SCORE EXTRA STEP RELAY COIL	A-32	43-6 70	Green-Yellow Orange	Energized by Yellow, Red, or Green score unit step-up arm switch.
3A	N. O.	E-32	81-1 43-6 Black-Red Green-Yellow	Part of lock-in circuit for this relay.
3B	N. O.	C-23	50-4 51-6 White White-Red	Completes circuit to Yellow, Red or Green score unit step-up coil for multiple steps.
3C	N. C.	A-6	15-5 70 Red-White Orange	Breaks circuit to mixer latch and timer cams index coils. (Safety switch.)
4A	N. O.	D-23	43-4 50 Green-Yellow White	Pulses Yellow, Red or Green score unit step-up coil for multiple steps.
SCORE EXTRA STEP INDEX COIL	A-39	25-9 70	Blue-White Orange	Energized during timing cam cycle by control unit cam switch #6B.
5A	N. O.	F-32	13-5 81-3 Red-Yellow Black-Red	Completes lock in circuit for score extra step relay.
SPOTTING CAMS INDEX COIL	A-39	98-1 70	Gray-Black Orange	Energized during timing cam cycle by control unit cam switch #4A.
6A	N. O.	J-6	83-1 30 Black-Yellow Yellow	Completes "game advantages" flash circuit.
6B	N. O.	J-16	13-4 30 Red-Yellow Yellow	(Same as above) also flashes extra ball lites during extra ball play.

# 5 RELAY BANK PICTORIAL VIEW NUMBERS CORRESPOND TO SWITCH CHART



Coil part numbers	
50 Ω	50 V - C-2794-9
90 Ω	50 V - C-2794-1
105 Ω	50 V - C-2794-23

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

# 5 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-4	75-2 70	Orange-White Orange	Energizes when anti-cheat relay drops out.
A S.P.D.T.	C-3	90-5 13-9 53-7	Gray Red-Yellow White-Yellow	Directs replay register reset circuit thru control unit cam switch #2A, when replays are being played, or thru 16 pulse cam when replays are being cancelled.
B N.O.	G-3	56-2 75-2	White-Brown Orange-White	Lock-in switch for this relay.
C N.O.	G-1	20-P 60-P	Blue (Plastic) Brown (Plastic)	Completes circuit to control unit motor during replay cancel.
D N.C.	C-4	21-6 63-2	Blue-Red Brown-Yellow	Opens start circuit during replay cancel.
ANTI-CHEAT RELAY COIL	A-22	78-4 70	Orange-Black Orange	Energized thru control unit cam switch #5C, its switches protect replay, 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 completes circuit to replay reset relay when this relay drops out.
B N.O.	D-22	78-4 30	Orange-Black Yellow	Lock-in switch for this relay.
C N.O.	L-23	20-4 80-1	Blue Black	Opens 17 volt circuit when this relay drops out.
D N.C.	E-10	57-6 85-7	White-Orange Black-White	Safety switch.
E S.P.D.T.	L-21	91-2 38 54-2	Gray-Red Yellow-Black White-Green	Opens 6 volt circuit, and lites tilt lite, when this relay drops out.

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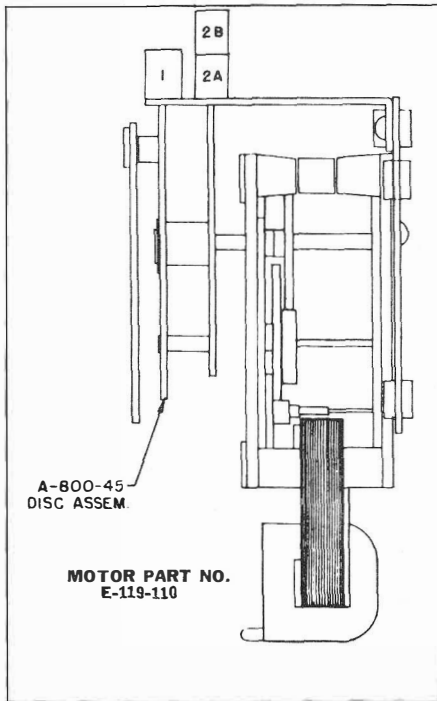


## 5 RELAY BANK SWITCH CHART — CONCLUDED

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
START RELAY COIL	A-4	21-6 70	Blue-Red Orange	Energized every time a coin is played, or when a red or yellow button is pressed.
A N. C.	G-25	14-8 81-6	Red-Green Black-Red	Opens game advantage circuits during spin of control unit.
B N. C.	B-20	75-4 78	Orange-White Orange-Black	Opens extra ball step-up circuit during spin of control unit.
C N. O.	F-6	13-3 90-9	Red-Yellow Black-White	Completes circuit to timer cams index, and mixer latch coils.
D N. O.	F-4	48-2 63-2	Green-Black Brown-Yellow	Lock-in switch for this relay.
RED BUTTON RELAY COIL	A-10	85-7 70	Black-White Orange	Energizes when red button is pressed.
A S. P. D. T.	C-6	93-2 98-2 14-3	Gray-Yellow Gray-Black Red-Green	Directs circuit from mixer latch, and timer cams index coils during extra ball play, to shutter motor when starting new game after extra ball play.
B N. O.	D-10	31-7 27-8	Yellow-Red Blue-Orange	Lock-in switch for this relay.
C N. C.	K-22	50-9 21-4	White Blue-Red	Opens extra ball lite circuit.
CHANGE LINES BUTTON RELAY COIL	A-35	83-9 70	Black-Yellow Orange	Energized by #2 button switch on front rail, when circuit complete thru other factors.
A S. P. D. T.	J-7	45-9 30 48-9	Green-White Yellow Green-Black	Breaks circuit to red scores red lite, and completes circuit to "red scores yellow" lite.
B S. P. D. T.	G-14	74-8 65 61-8	Orange-Black Brown-White Brown-Red	Breaks regular red & yellow 3-in-line scoring circuits, and completes change-over red & yellow 3-in-line scoring circuits.
C S. P. D. T.	G-15	90-10 71-3 85-8	Gray Orange-Red Black-White	Breaks regular red & yellow 4-in-line scoring circuits, and completes change-over red and yellow 4-in-line scoring circuits.
D S. P. D. T.	D-15	38-9 25 40-9	Yellow-Black Blue-White Green	Breaks yellow replay counter step-up circuit for regular scoring, and completes yellow replay counter step-up circuit for change-over scoring.
E S. P. D. T.	D-17	41-9 75 53-9	Green-Red Orange-White White-Yellow	Breaks red replay counter step-up circuit for regular scoring, and completes red replay counter step-up circuit for change-over scoring.
F N. O.	F-35	23-10 83-9	Blue-Yellow Black-Yellow	Lock-in switch for this relay.

# BALL LIFT MOTOR PICTORIAL VIEW

NUMBERS CORRESPOND TO SWITCH CHART BELOW



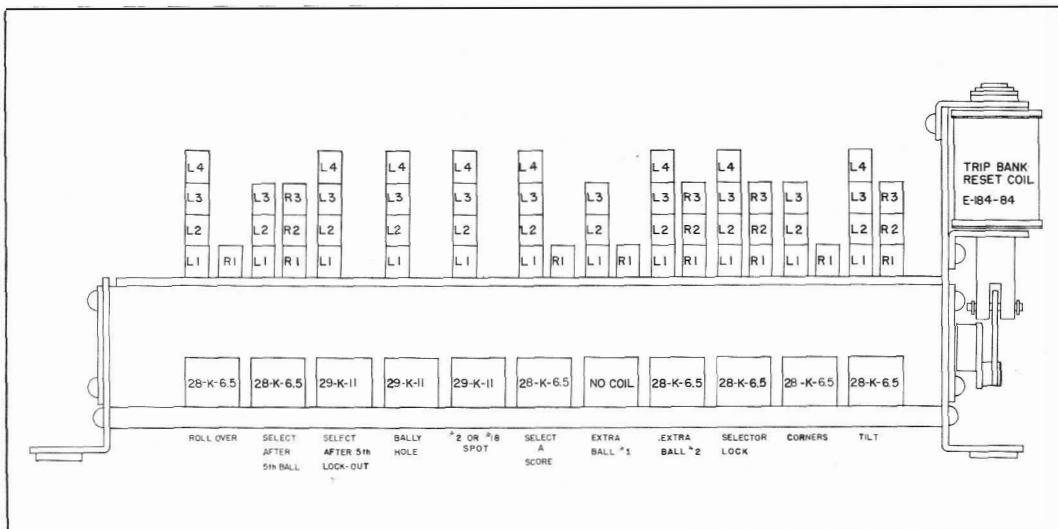
**CODE**

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

CAM SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCH
1 N.O.	H-12	30 91-1	Yellow Grey-Red	Carry-over switch for ball lifter motor.
2A N.O.	E-7	43-2 27-2	Green-Yellow Blue-Orange	Energizes timer unit step-up coil.
2B N.O.	F-8	30 98-3	Yellow Gray-Black	Completes circuit to selector lock trip relay.

# TRIP RELAY BANK PICTORIAL VIEW

NUMBERS CORRESPOND TO SWITCH-CHART



**CODE**

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

CHART ON NEXT PAGE

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

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
ROLLOVER TRIP COIL	A-31	J 70	Jumper Orange	Energized by control unit cam switch #8A, when spotting disc wipers stop on correct position.
L1 N.O.	K-2	27-9 31-9	Blue-Orange Yellow-Red	Completes circuit to "red" or "yellow" rollover lite, thru magic squares feature disc, or select-a-score trip relays switch.
L2 N.C.	A-31	98-10 J	Gray-Black Jumper	Breaks circuit to coil.
L3 N.O.	H-34	20-10 40-8	Blue Green	Part of circuit to energize select after 5th ball trip relay.
L4 N.C.	G-22	27-7 90-3	Blue-Orange Gray	Game proportioning.
R1 N.O.	B-9	71-11 98-5	Orange-Red Gray-Black	Completes circuit to energize select after 5th lock-out relay, when 1st extra ball is shot.
SELECT AFTER 5th BALL TRIP COIL	A-33	J 70	Jumper Orange	Energized by red or yellow rollover button switch, when circuit complete thru other factors.
L1 N.O.	G-34	20-10 38-10	Blue Yellow-Black	Completes circuit to magic squares buttons, also to change lines button relay.
L2 N.C.	A-33	40-10 J	Green Jumper	Breaks circuit to coil.
L3 N.C.	H-35	15-10 18-10	Red-White Red-Black	Safety circuit for change-lines button relay.
R1 N.O.	K-2	31-9 41-10	Yellow-Red Green-Red	Completes circuit to "select after 5th ball" lite, thru magic squares feature disc, or select-a-score trip relay switch.
R2 N.C.	K-1	10-2 36-2	Red Yellow-Brown	Breaks circuit to "select now" lite.
R3 N.C.	K-4	52-9 85-9	White-Blue Black-White	Breaks circuit to "select before shooting 4th ball" lite.
SELECT AFTER 5th LOCK-OUT TRIP COIL	A-9	J 70	Jumper Orange	Energized thru rollover trip relay switch, when 1st extra ball is shot.
L1 S.P.D.T.	I-35	18-10 41-5 23-10	Red-Black Green-Red Blue-Yellow	Safety circuit for change-lines button relay.
L2 N.C.	I-35	20-10 41-5	Blue Green-Red	Breaks circuit to "magic squares" buttons, also to change lines button relay.
L3 N.C.	A-9	71-11 J	Orange-Red Jumper	Breaks circuit to coil.
L4 N.C.	K-2	31-9 52-9	Yellow-Red White-Blue	Breaks "select after 5th ball" and "red" or "yellow" rollover lite circuits.
BALLY HOLE TRIP COIL	A-31	J 70	Jumper Orange	Energized by control unit.
L1 N.O.	J-6	18-4 30	Red-Black Yellow	Completes circuit to "Bally-Hole" lite.
L2 N.C.	B-31	14 J	Red-Green Jumper	Breaks circuit to coil.
L3 N.O.	E-19	50-8 90-8	White Gray	Completes circuit to extra ball unit step-up coil.
L4 N.C.	G-19	10-4 75-5	Red Orange-White	Game proportioning.

CONTINUED ON NEXT PAGE

# TRIP RELAY BANK CHART — CONTINUED

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
#2 or #18 SPOT TRIP COIL	A-29	J 70	Jumper Orange	Energized at 6th step of "magic squares" feature unit, thru mixer #2.
L1 N. O.	G-37	71-7 30	Orange-Red Yellow	Completes circuit to red or yellow relay.
L2 N. C.	B-29	23-5 J	Blue-Yellow Jumper	Breaks circuit to coil.
L3 S. P. D. T.	J-32	63-1 52-8 51-1	Brown-Yellow White-Blue White-Red	Breaks circuit to #18 lite, and completes circuit to #2 lite. (in card)
L4 S. P. D. T.	K-5	14-1 93-9 20-8	Red-Green Gray-Yellow Blue	Breaks circuit to spot #18 lite, and completes circuit to #2 lite.
SELECT-A- SCORE TRIP COIL	A-31	J 70	Jumper Orange	Energized by control unit cam switch #8A, when spotting disc wipers stop on correct position.
L1 N. O.	F-35	56-9 60-9	White-Brown Brown	Circuit to energize change lines button relay.
L2 N. C.	A-31	21 J	Blue-Red Jumper	Breaks circuit to coil.
L3 N. O.	J-2	52-9 30	White-Blue Yellow	Part of circuit to "red" or "yellow" rollover lite, and select after 5th ball lite.
L4 N. O.	J-7	51-9 30	White-Red Yellow	Completes circuit to "select-a-score" lite.
R1 N. C.	G-25	14-8 54-9	Red-Yellow White-Green	Proportioning circuit.
EXTRA BALL #1 TRIP				NOTE: Both extra ball trip relays work off same coil.
L1 N. O.	J-22	21-4 30	Blue-Red Yellow	Completes circuit to "extra balls" lite.
L2 S. P. D. T.	E-21	85-4 30 61-2	Black-White Yellow Brown-Red	Breaks guaranteed score step circuit, and completes circuit to extra ball unit for 1st step.
L3 S. P. D. T.	G-24	52-10 27-7 18-2	White-Blue Blue-Orange Red-Black	Breaks score steps circuit, and further completes extra ball step circuit.
R1 N. O.	G-24	27-7 41-8	Blue-Orange Green-Red	Proportioning circuit.
EXTRA BALL #2 TRIP COIL	A-10	25-7 70	Blue-White Orange	Energized by yellow button switch.
L1 S. P. D. T.	J-16	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.
L2 N. C.	A-10	25-7 31-8	Blue-White Yellow-Red	Breaks circuit to coil.
L3 N. C.	J-6	36-5 83-1	Yellow-Brown Black-Yellow	Breaks circuit to flash game advantage lites, during extra ball play.
L4 S. P. D. T.	D-6	14-3 43-9 98-2	Red-Green Green-Yellow Gray-Black	Breaks circuit to shutter motor, and completes circuit to timer cams index, during extra ball play.
R1 S. P. D. T.	H-24	75-5 15-7 45-2	Orange-White Red-White Green-White	Proportioning circuit.
R2 N. C.	H-25	45-2 81-6	Green-White Black-Red	Breaks circuit to other game advantages, during extra ball play.
R3 N. O.	D-12	38-3 91-1	Yellow-Black Gray-Red	Completes circuit to ball lifter motor, during extra ball play.

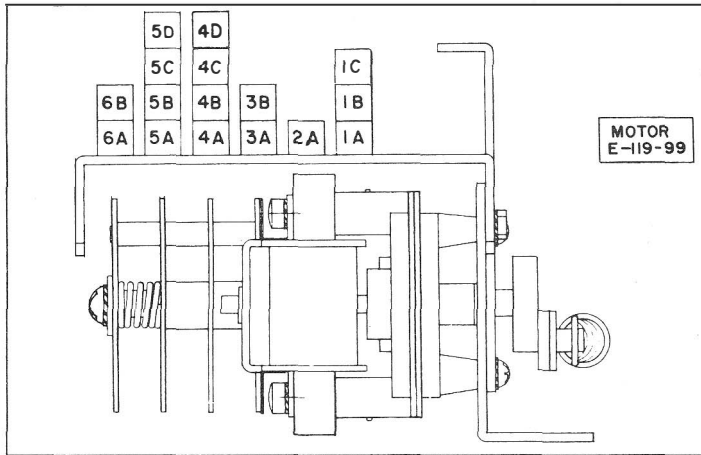
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# TRIP RELAY BANK CHART — CONCLUDED

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
SELECTOR LOCK TRIP COIL	A-9	J 70	Jumper Orange	Energized at 4th step of timer unit.
L1 N. O.	E-4	18-6 50-2	Red-Black White	Completes circuit to make yellow button alive.
L2 N. C.	A-9	75-3 J	Orange-White Jumper	Breaks circuit to coil.
L3 N. O.	D-8	27-2 78-6	Blue-Orange Orange-Black	Completes circuit to timer unit step-up coil.
L4 N. O.	H-36	15-10 23-10	Red-White Blue-Yellow	Safety circuit for change-lines button relay.
R1 N. O.	B-10	25-8 31-8	Blue-White Yellow-Red	Completes circuit to extra ball trip relays, during extra ball play.
R2 N. C.	H-34	20-10 38-10	Blue Yellow-Black	Breaks circuit to "magic squares" buttons, also to change-lines button relay.
R3 N. C.	J-1	10-2 52-9	Red Blue-White	Breaks circuit to "select now" lite.
CORNERS TRIP COIL	A-30	J 70	Jumper Orange	Energized by control unit cam switch #8A, when spotting wipers stop on correct position.
L1 N. O.	J-6	85-1 30	Black-White Yellow	Completes circuit to "corners" lite.
L2 N. O.	G-16	13-1 71-3	Red-Yellow Orange-Red	Part of corners replay scoring circuit.
L3 N. C.	A-30	61-4 J	Brown-Red Jumper	Breaks circuit to coil.
R1 N. O.	C-18	18 98	Red-Black Gray-Black	Part of corners replay scoring circuit.
TILT TRIP COIL	A-11	14-5 70	Red-Green Orange	Energized by any tilt switch, or the plumb-bob tilt, also at 39th step of timer unit.
L1 S. P. D. T.	I-6	21-3 30 45-8	Blue-Red Yellow Green-White	Breaks circuit to game advantages, replay scoring, ball counting, and completes circuit to shutter motor when game is tilted.
L2 N. C.	H-35	40-8 41-5	Green Green-Red	Breaks circuit to magic squares buttons, also to change lines button relay.
L3 N. C.	L-23	10 20-4	Red Blue	Breaks 17 volt circuit.
L4 S. P. D. T.	L-22	38 81 91-2	Yellow-Black Black-Red Gray-Red	Breaks 6 volt circuit, and completes circuit to tilt lite.
R1 N. O.	E-11	57-6 85-7	White-Orange Black-White	Safety circuit for red button relay.
R2 N. C.	D-19	10-8 50-8	Red White	Breaks Bally-hole extra ball step-up circuit.
R3 N. C.	G-1	20-P 60-P	Blue (Plastic) Brown (Plastic)	Breaks circuit to control, magic squares, and mixer unit motors.

# SHUTTER MOTOR PICTORIAL VIEW

NUMBERS CORRESPOND TO SWITCH CHART



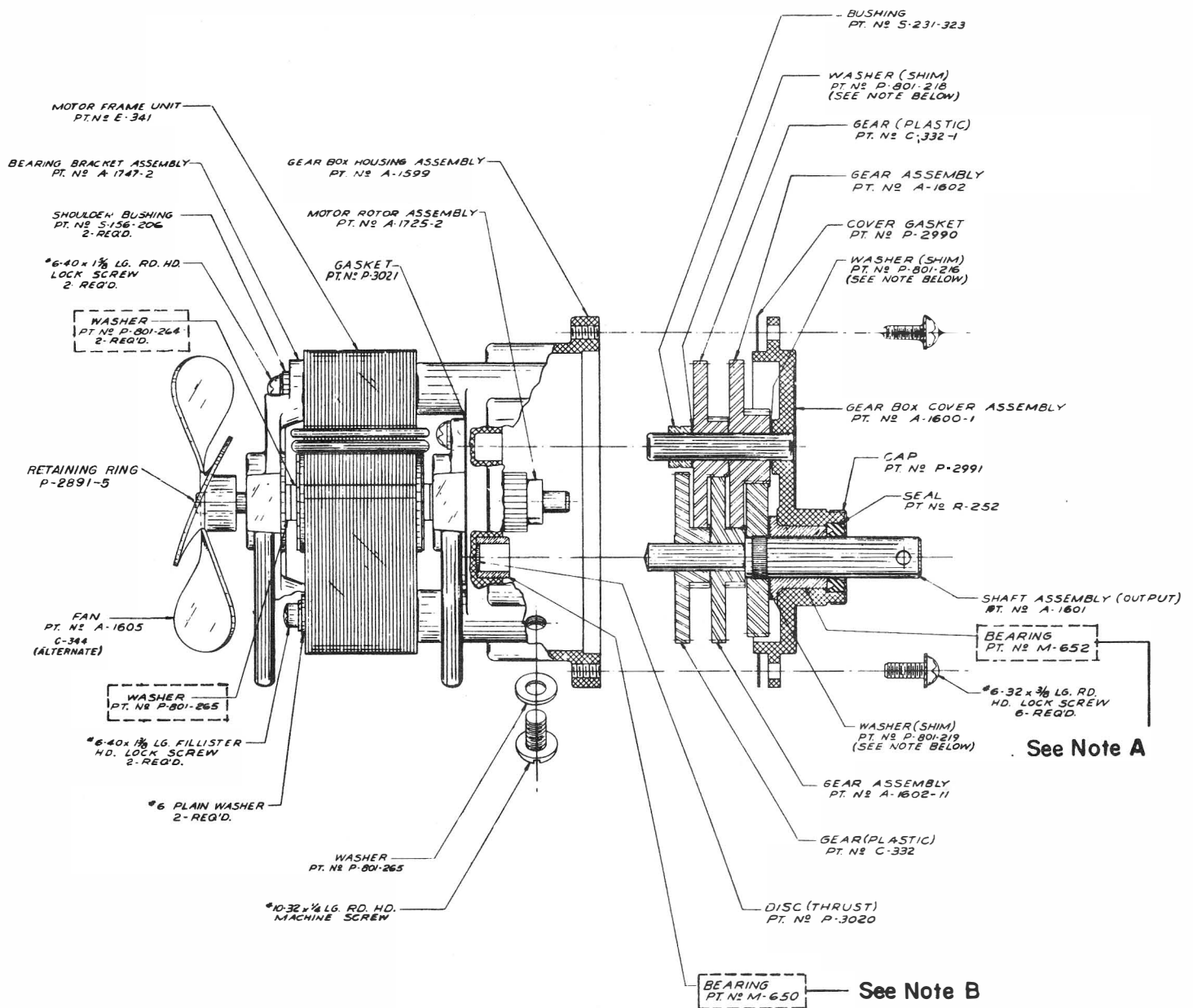
**CODE**

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

# 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-13	93 21-3	Gray-Yellow Blue-Red	Completes circuit to replay scoring circuit.
1B N. O.	G-6	30 14-3	Yellow Red-Green	Carry thru for shutter motor.
1C N. C.	I-8	21-3 98-9	Blue-Red Gray-Black	Safety switch.
2A N. C.	F-12	31-3 36-3	Yellow-Red Yellow-Brown	Completes circuit to ball lifter motor (closed normally) open during shutter cycle.
3A N. O.	C-38	30 85-5	Yellow Black-White	Resets extra ball, and Yellow, Red, Green replay counter units.
3B N. O.	H-2	20-P 70-P	Blue (Plastic) Brown(Plastic)	Resets trip relay bank.
4A N. O.	F-6	18-3 14-3	Red-Black Red-Green	(Closed when shutter is open). Completes circuit to shutter motor.
4B N. C.	I-33	21-3 40-8	Blue-Red Green	Safety switch for "magic squares" button circuits.
4C N. O.	H-6	45-8 18-3	Green-White Red-Black	Starts shutter motor if game is tilted when shutter is open.
4D N. C.	F-34	60-9 61	Brown Brown-Red	Circuit to change lines button relay.
5A N. C.	H-8	21-3 65-2	Blue-Red Brown-White	Safety switch for timer reset.
5B N. C.	E-19	90-8 36-4	Gray Yellow-Brown	(Closed when shutter is closed) Part of "Bally-Hole" extra ball step-up circuit.
5C N. O.	E-37	31-4 91-4	Yellow-Red Gray-Red	Safety circuit (lifter start relay).
5D S.P.D.T.	E-15	43-9 13-3 93-2	Green-Yellow Red-Yellow Gray-Yellow	Breaks circuit to shutter motor and makes circuit to timer cams index and mixer latch coils.
6A N. O.	H-8	30 71-8	Yellow Orange-Red	Completes circuit to timer reset coil.
6B N. O.	C-39	30 78-3	Yellow Orange-Black	Resets magic squares, and Yellow, Red, Green score units.

# MOTOR ASSEMBLY (Part No. E-119-97)



See Note A

See Note B

**NOTE**  
 IN ORDER TO MAINTAIN PROPER CLEARANCES BETWEEN GEARS IT IS MOST IMPORTANT THAT WHEN REASSEMBLING GEAR TRAIN:  
 1. SHIMS BE REPLACED IN THEIR RESPECTIVE LOCATIONS.  
 2. SAME NUMBER OF SHIMS BE REPLACED IN EACH RESPECTIVE LOCATION.  
 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.	
G-266	Back glass
M-281-14	Lock and keys (2) keyed alike
A-1821-4	Magic Squares Display "A"
A-1821-5	Magic Squares Display "B"
A-1821-6	Magic Squares Display "C"
A-1821-7	Magic Squares Display "D"
E-122-19	Transformer

## **Back Door Assembly:**

M-281-12	Lock and keys (2) keyed alike
E-300-73	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-237	Ball shooter spring (short)
R-108-3	Ball shooter tip
A-429-15	Ball trough only
P-1900-18	Coin Box
E-130-10	Counter—48 Volt
CA-350-1	Legs
M-163-4	Leg Adjuster
M-106	Leg Bolt
M-310-2	Leg-Anti-split bolt
M-497	Wire (long) for A-429-15 trough
M-497-1	Wire (short) for A-429-15 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 5¢
AS-277-27	Coin switch assembly 10¢
CA-567-35	Front door only
AS-1611	Front door assembly 5¢
AS-1611-1	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:**

A-1272-17	"A" Button
A-1272-18	"B" Button
A-1272-19	"C" Button
A-1272-20	"D" Button
A-1272-21	Selector Score Button
P-2210-8	5¢ plate—Coin Entry
P-2210-9	10¢ plate—Coin Entry
P-2210-33	Plate for A-B-C-D Buttons
P-2210-35	Plate for Selector Score Button
CA-815-2	Front moulding only

## **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

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