

Bally®

NIGHT-CLUB

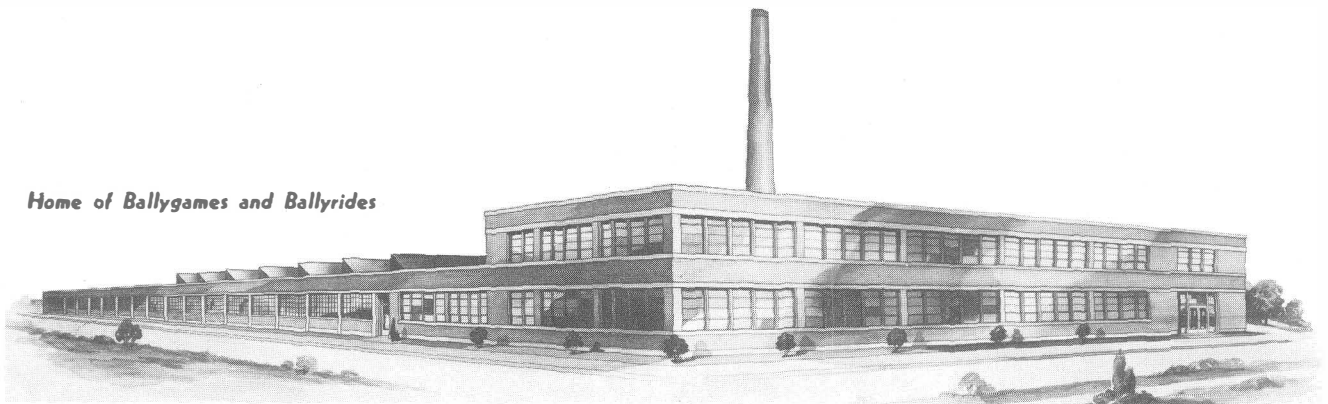
OPERATING INSTRUCTIONS

AND PARTS CATALOG

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

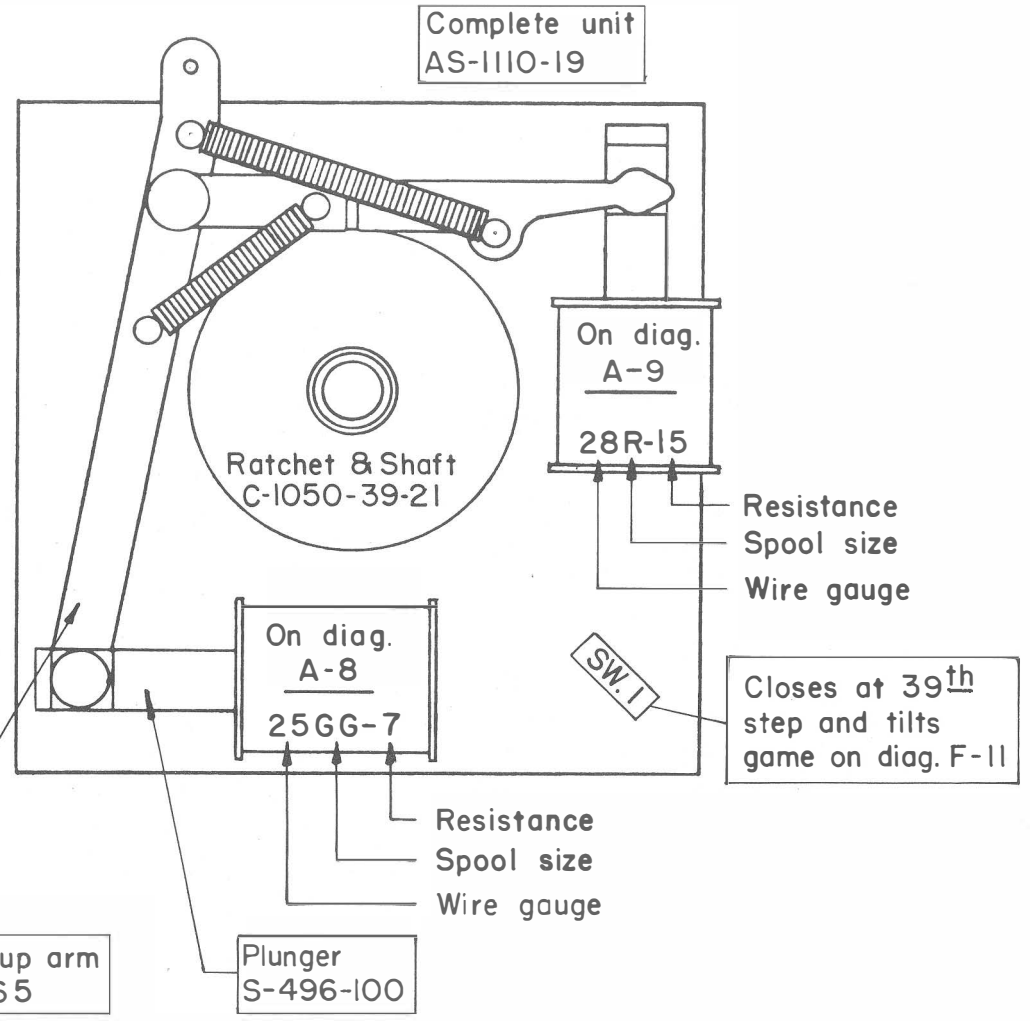
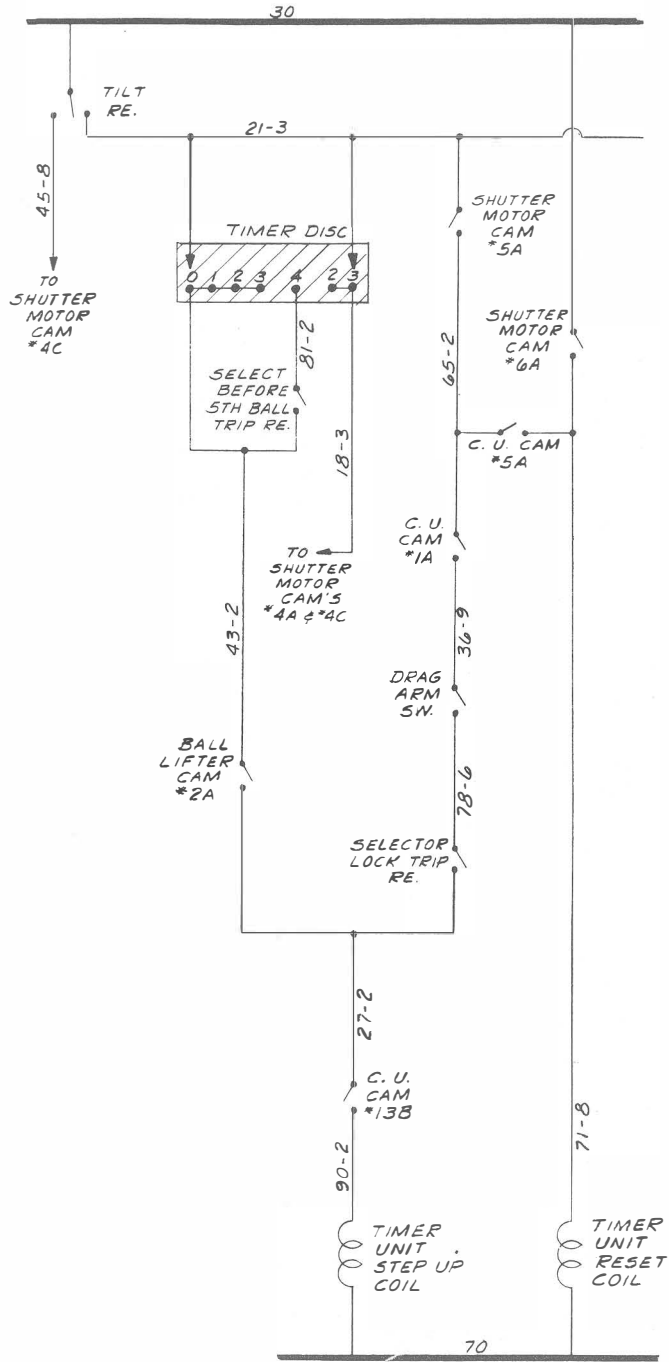
**FOR QUICKEST SERVICE
STATE CORRECT PART NUMBER
WHEN ORDERING PARTS**

Home of Ballygames and Ballyrides



TIMER UNIT STEP-UP AND RESET CIRCUIT

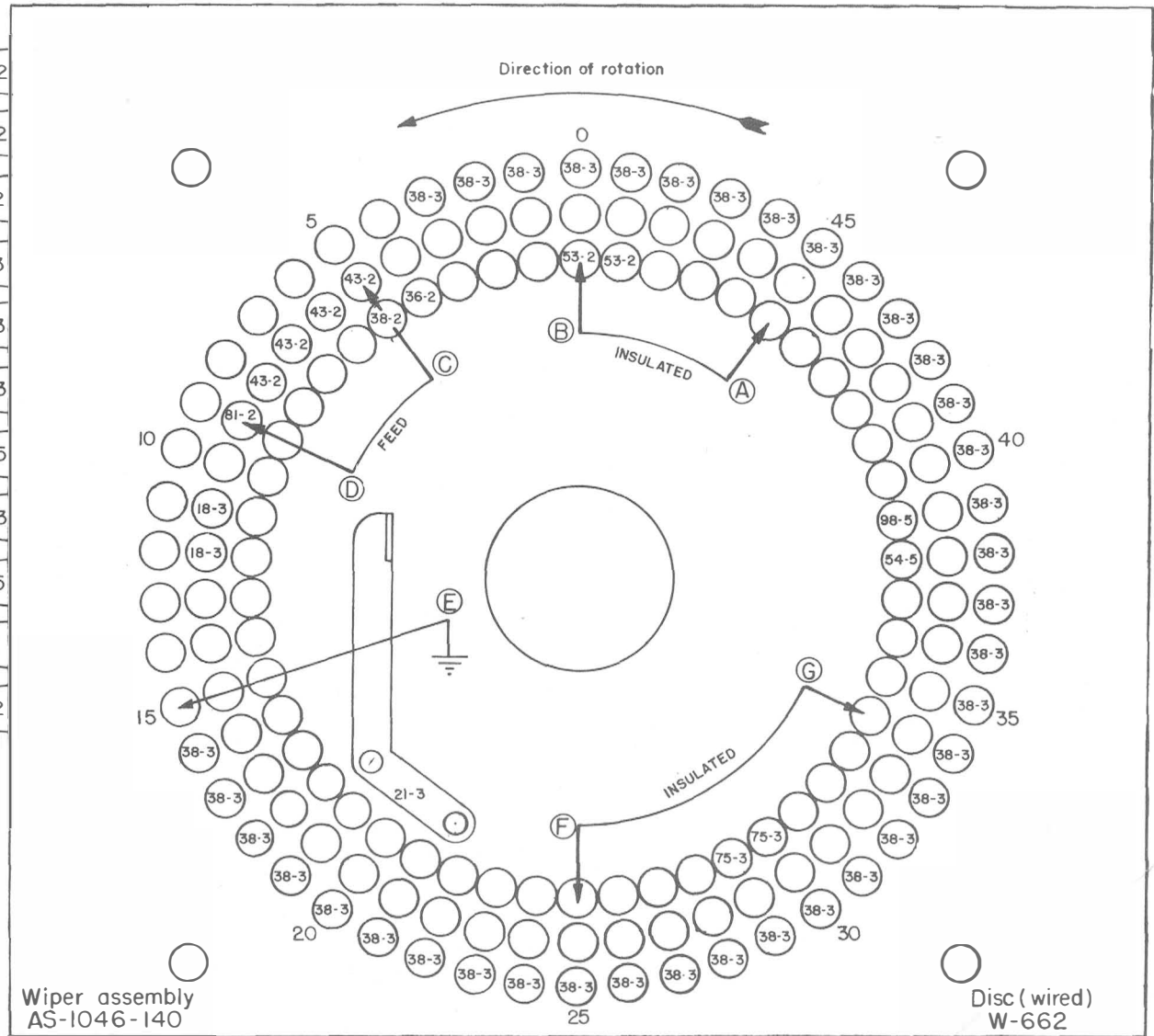
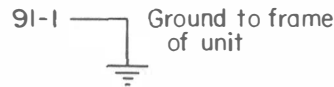
TIMER UNIT viewed from COIL side



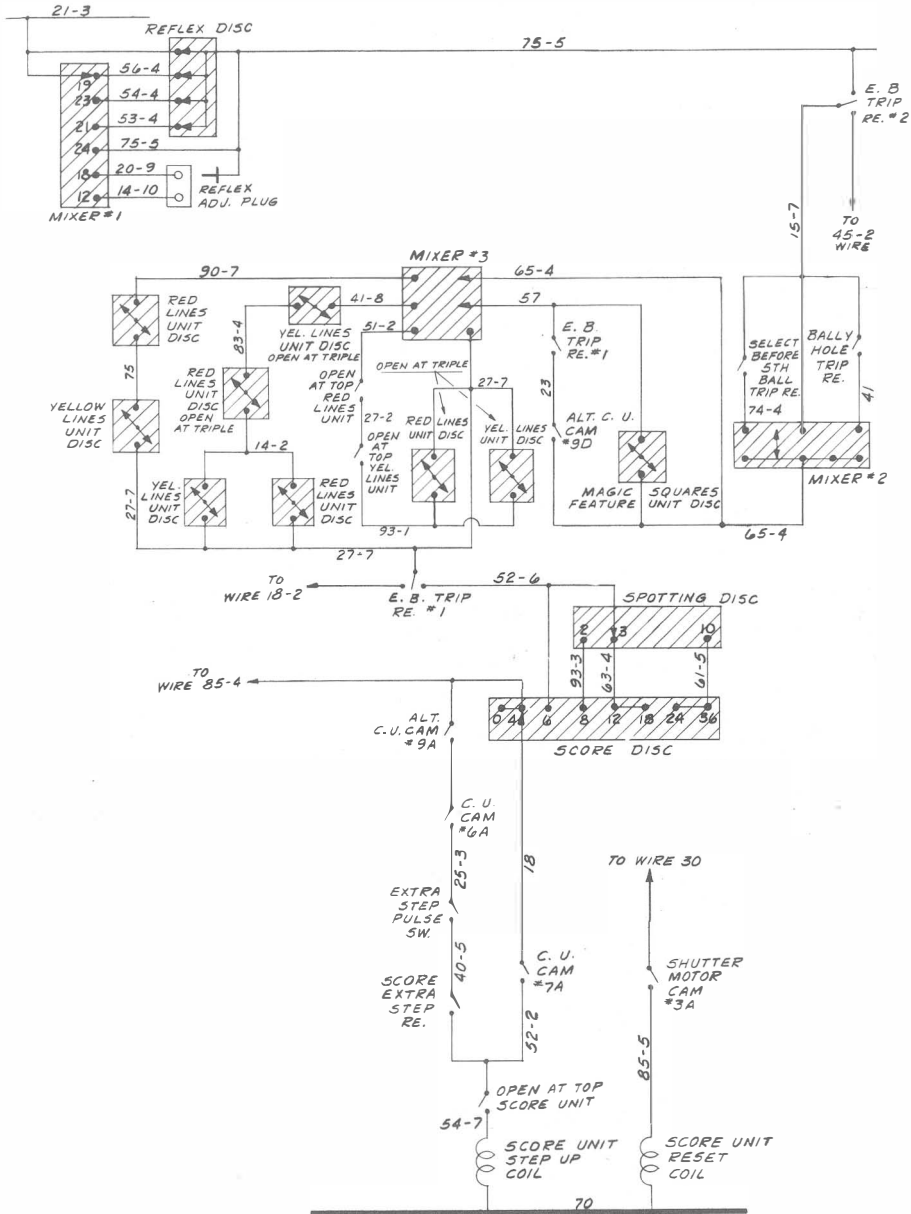
TIMER UNIT viewed from BUTTON or WIPER side

39 step unit. Wipers shown in zero or reset position

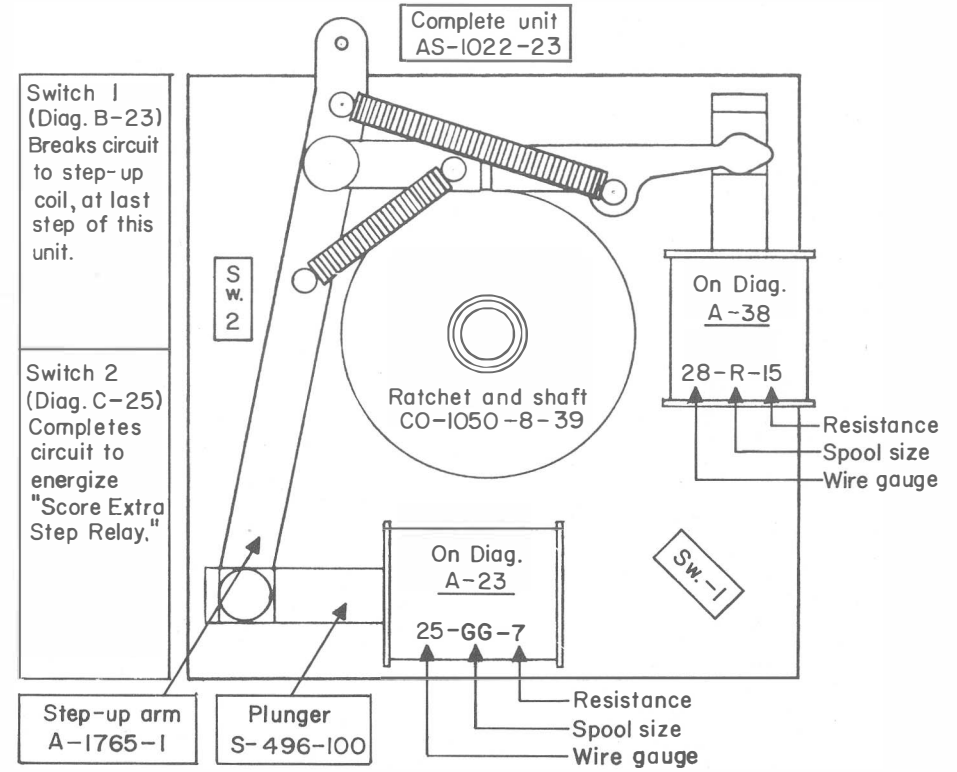
- Feeds wiper (A) to complete circuit to "Select Now" lite at 4th & 5th step (Diag. K-1) 53-2
- Completes circuit to "Select Now" lite at 4th step thru wipers (A) & (B) (Diag. K-1) 36-2
- Timer step up circuit to ball lifter cam switch thru wiper (C) (Diag. G-7) 43-2
- To feed wiper for wipers (C) & (D) (Diag. G-8) 21-3
- Closes shutter at 2nd step thru wiper (D) (Diag. G-8) 18-3
- Completes circuit to ball lifter motor from 1st to 39th step when 8th ball trough switch opens thru wiper E (Diag. D-12) 38-3
- Completes circuit to trip Selector Lock relay #1 at 4th step. (Diag. C-10) 54-5
- ← Thru wipers (F) & (G) 75-3
- Completes circuit to trip Selector Lock relay #1 at 5th step. (Diag. C-9) 98-5
- Keeps circuit to ball lifter cam switch, if Select Before 5th Ball is lit. (Diag. G-8) 81-2
- Completes circuit to "Select Now" lite at 5th step thru wipers (A) & (B) (Diag. K-1) 38-2



SCORE UNIT STEP-UP AND RESET CIRCUIT

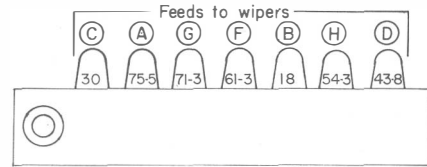
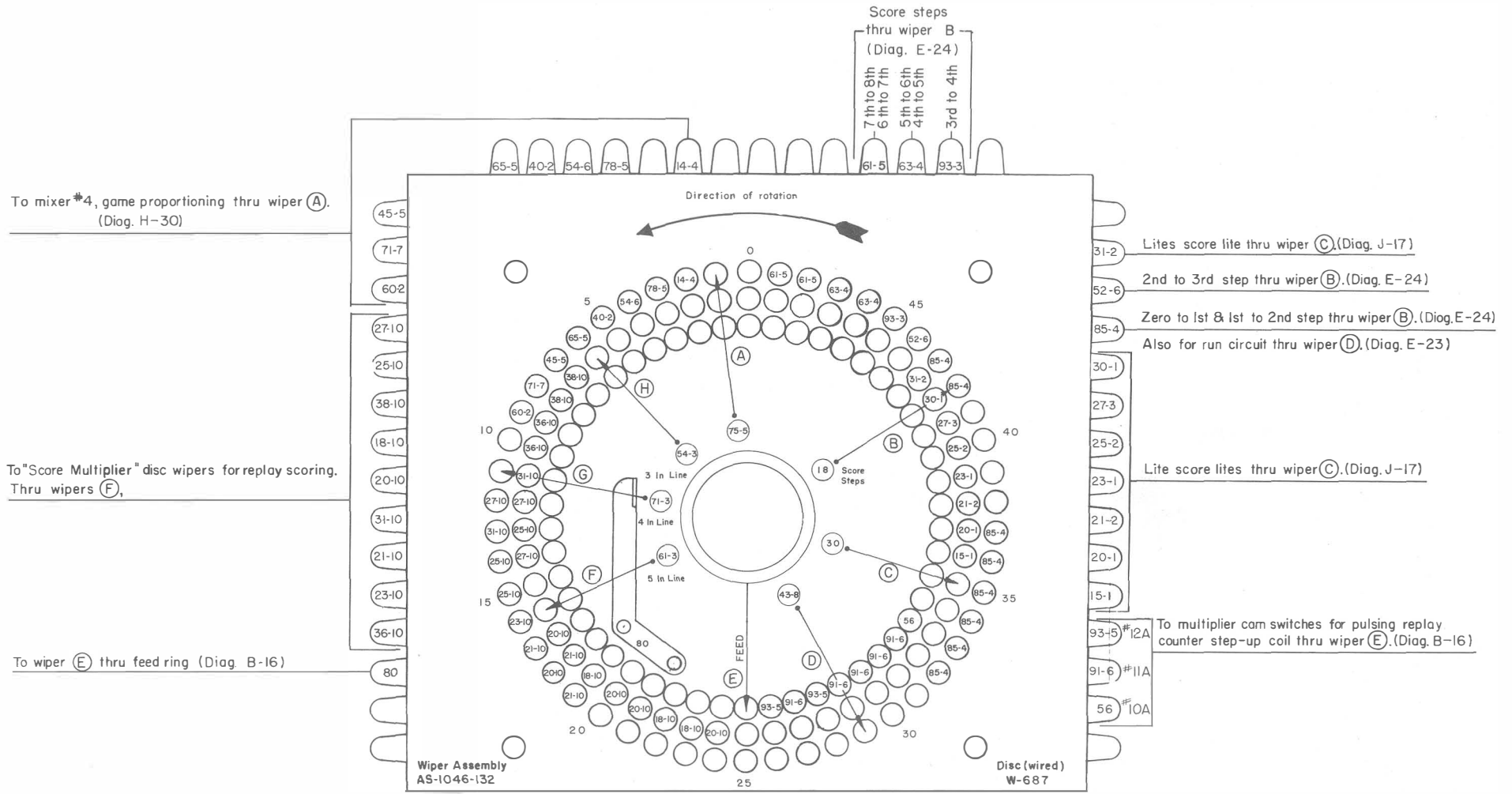


SCORE UNIT viewed from COIL side

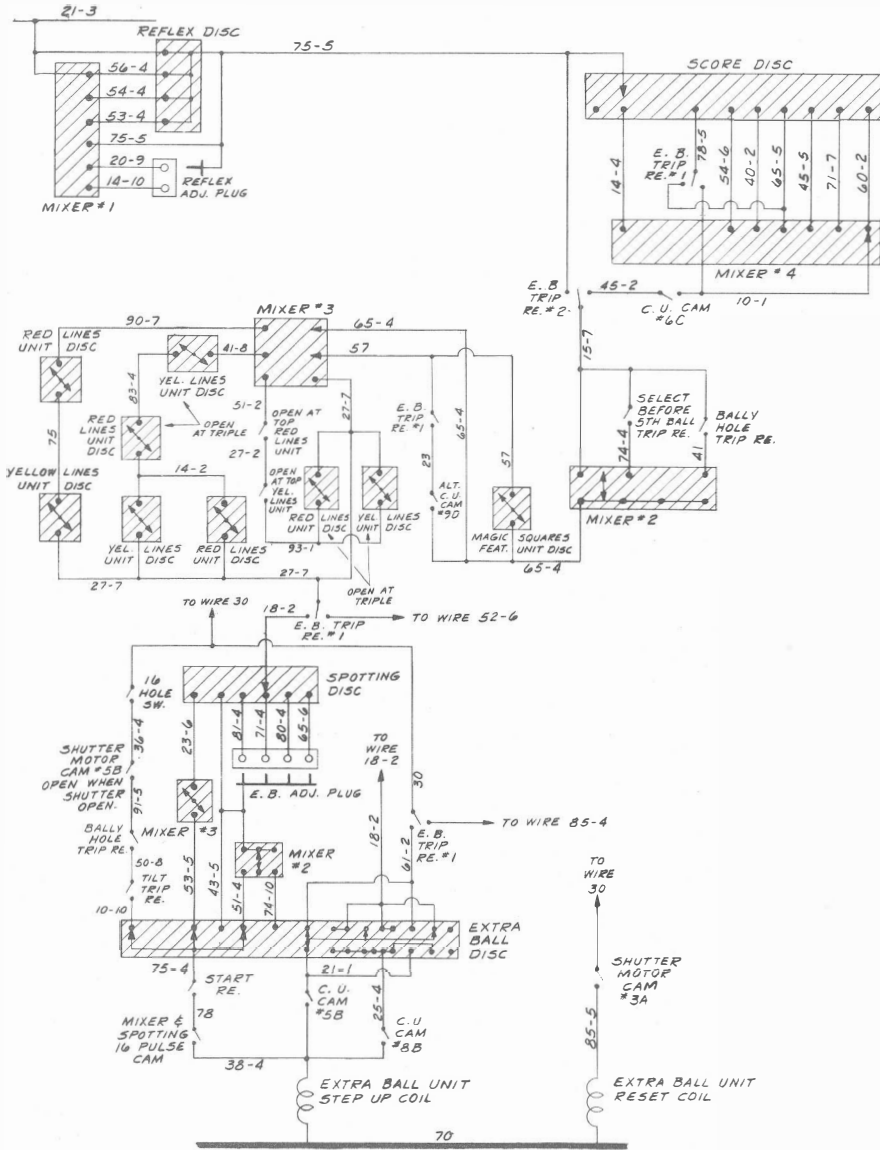


SCORE UNIT viewed from BUTTON or WIPER side

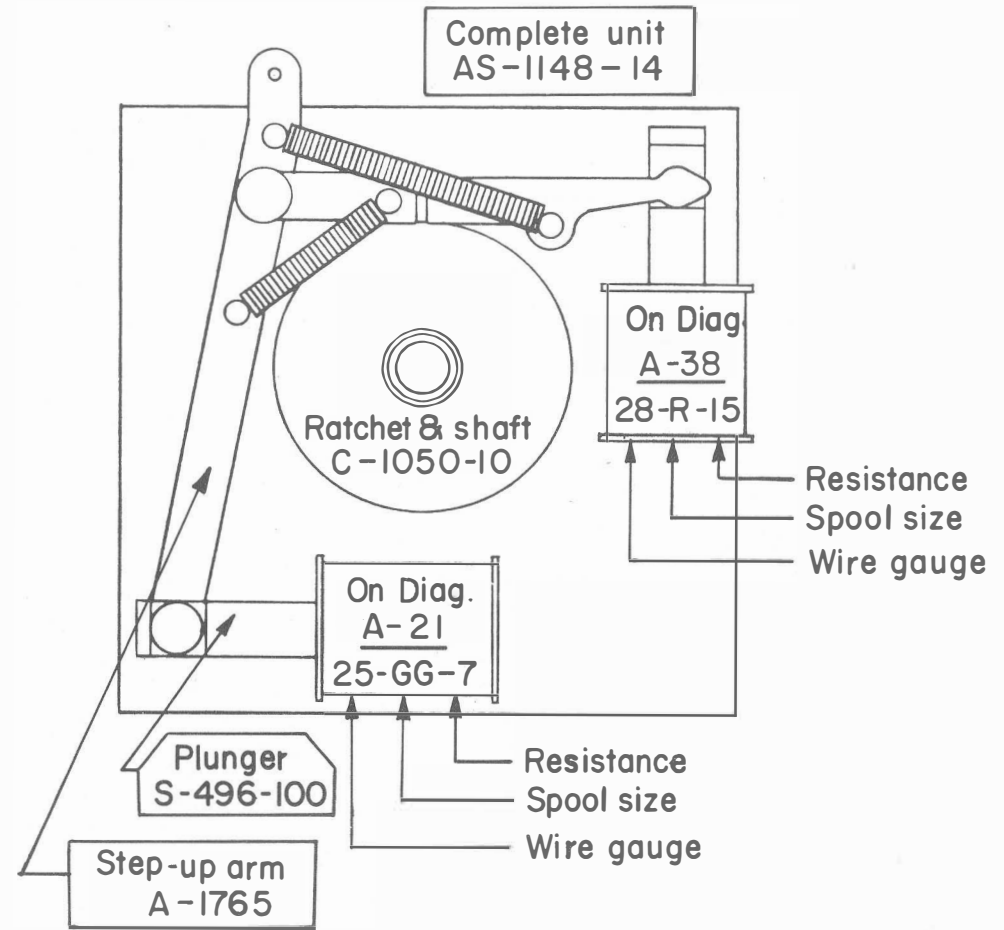
8 step unit. Wipers shown in zero or reset position



EXTRA BALL STEP-UP AND RESET CIRCUIT

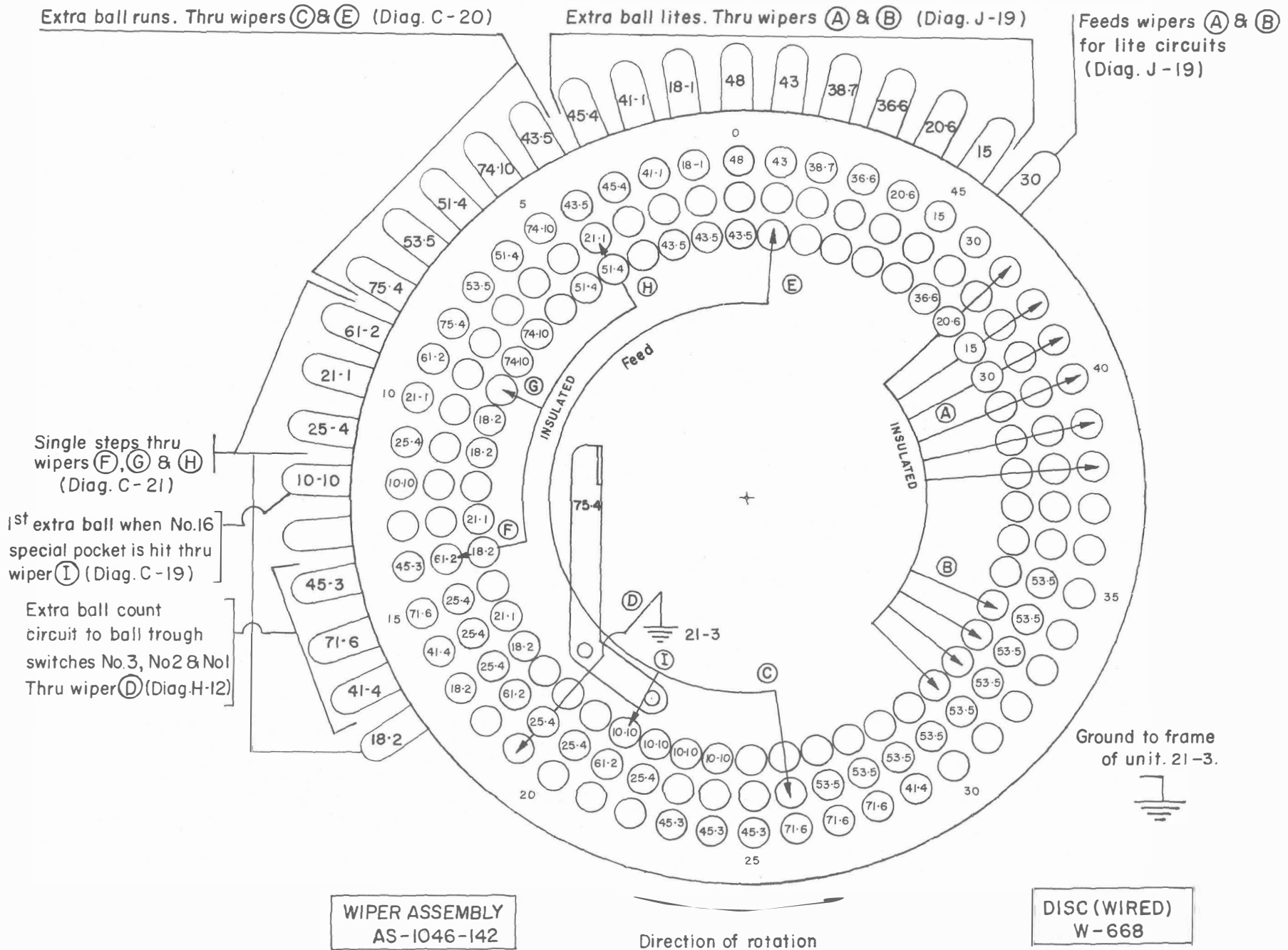


EXTRA BALL UNIT viewed from COIL side



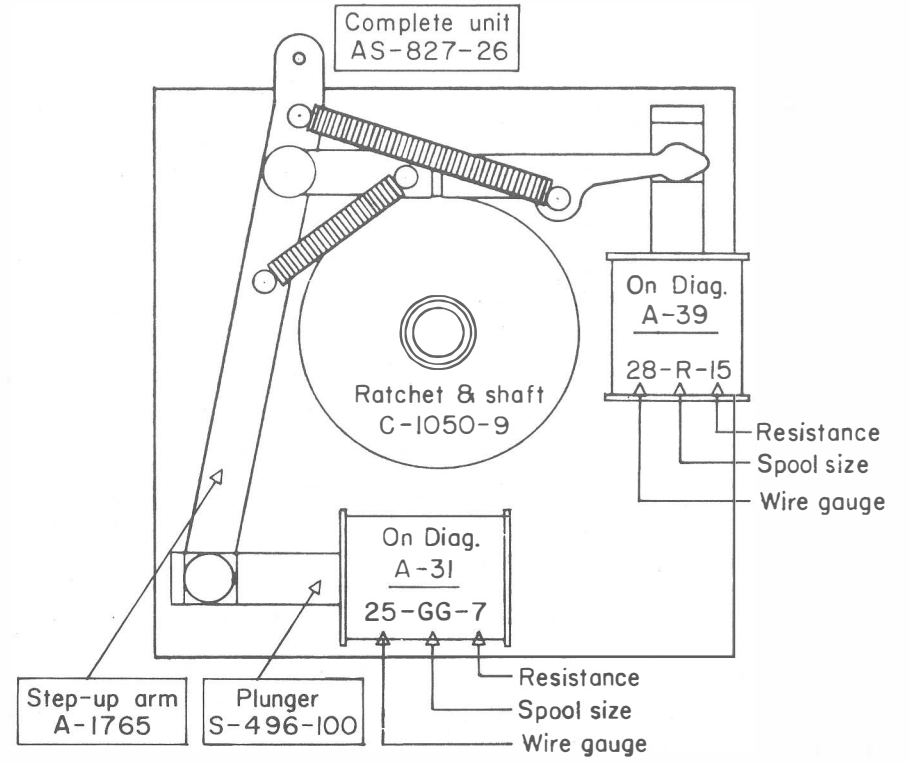
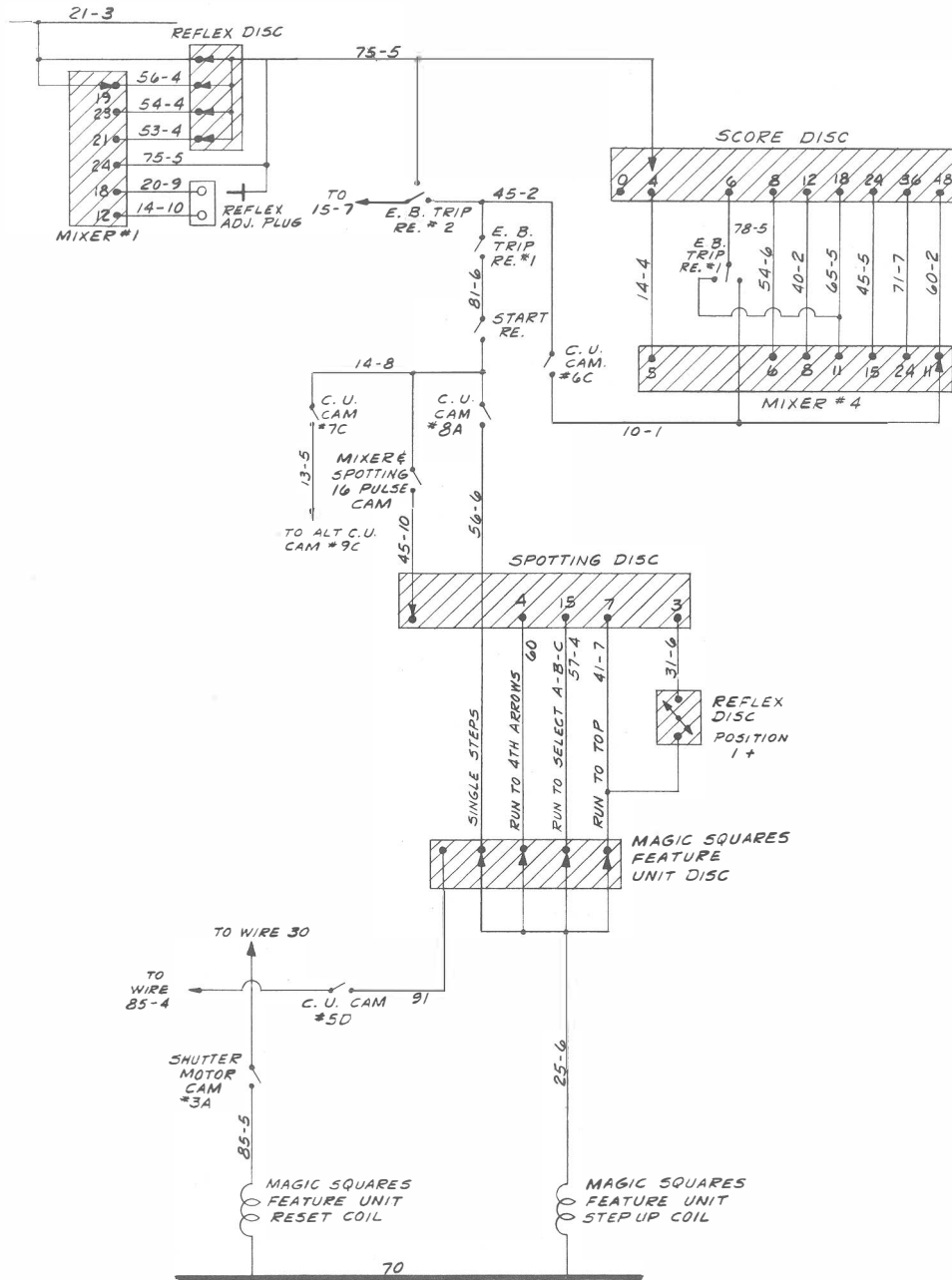
EXTRA BALL UNIT viewed from BUTTON or WIPER side

10 step unit. Wipers shown in zero or reset position



MAGIC SQUARES FEATURE UNIT STEP-UP AND RESET CIRCUIT

MAGIC SQUARES FEATURE UNIT viewed from COIL side



MAGIC SQUARES FEATURE UNIT viewed from BUTTON or WIPER side

9 step unit. Wipers shown in zero or reset position

Single step at 5th & 7th steps of unit thru wiper (A).(Diag.C-30)

Run to 4th step.
Run to top.
Run to 5th step.

Run circuits thru wipers (A) & (B).(Diag.C-31)

Thru mixer #3, game proportioning thru wipers (A) & (D).(Diag.G-24)

Lites magic squares & spots #2 or #18 feature lites thru wipers (G), (H) & (I).(Diag.J-4)

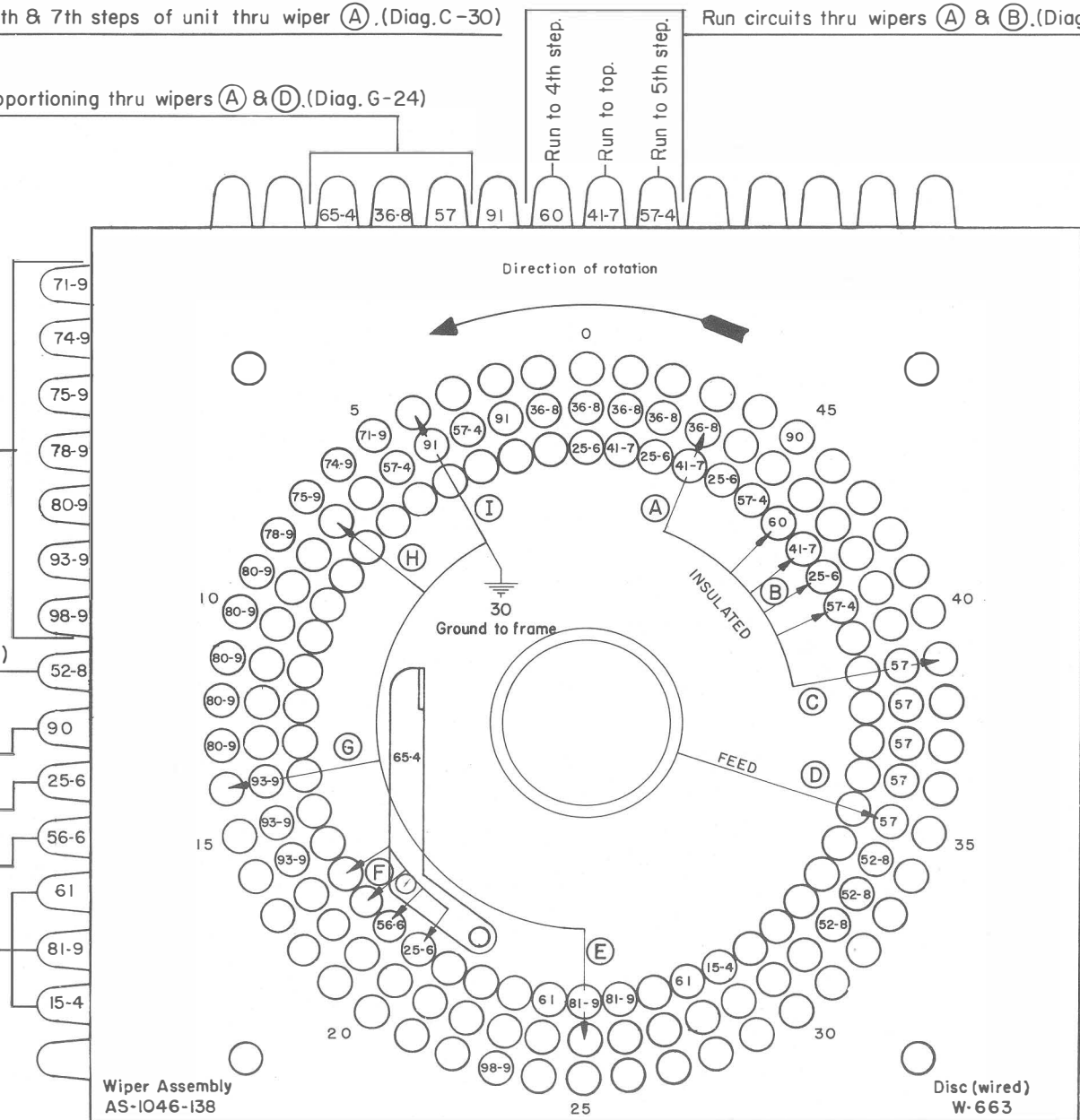
Lites #2 or #18 lite in card thru wiper (E).(Diag.J-32)

Thru mixer #2, energizes spot #2 or #18 relay thru wiper (C).(Diag.C-31)

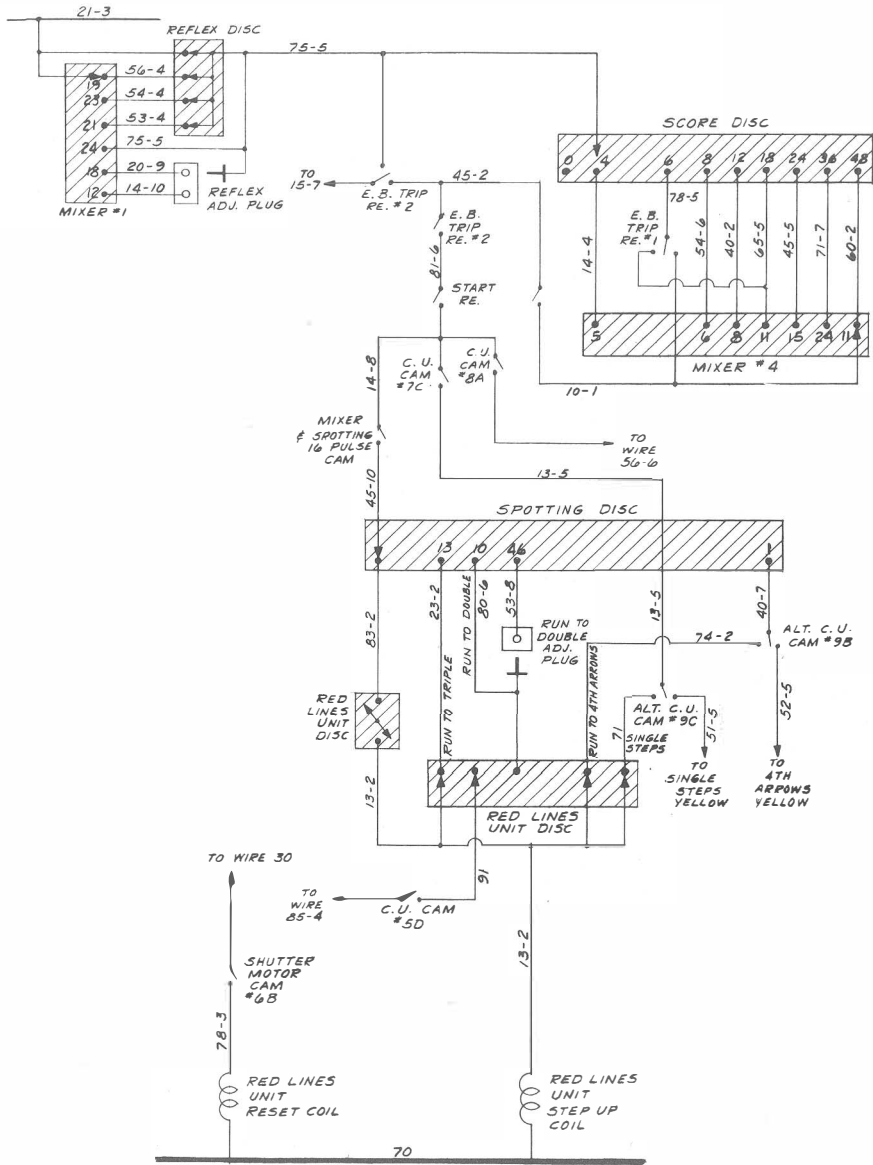
Feed for wipers (A), (B), (C) & (F).

Single steps thru wipers (F).(Diag.C-30)

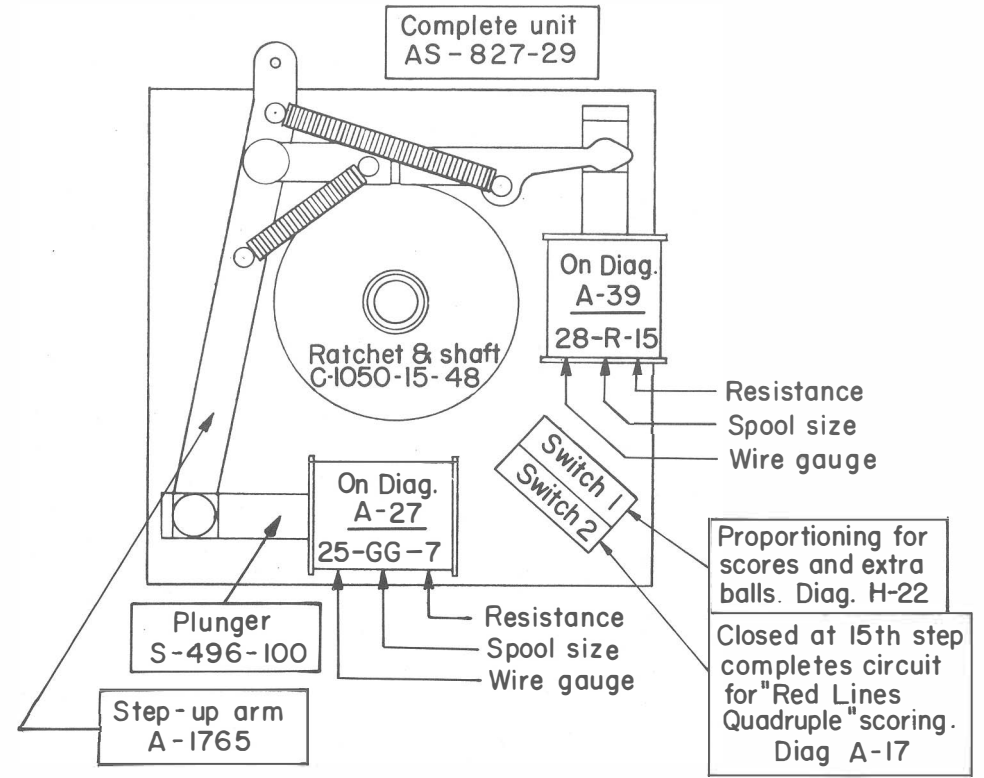
Completes circuit to magic squares buttons thru wipers (F).(Diag.F-35)



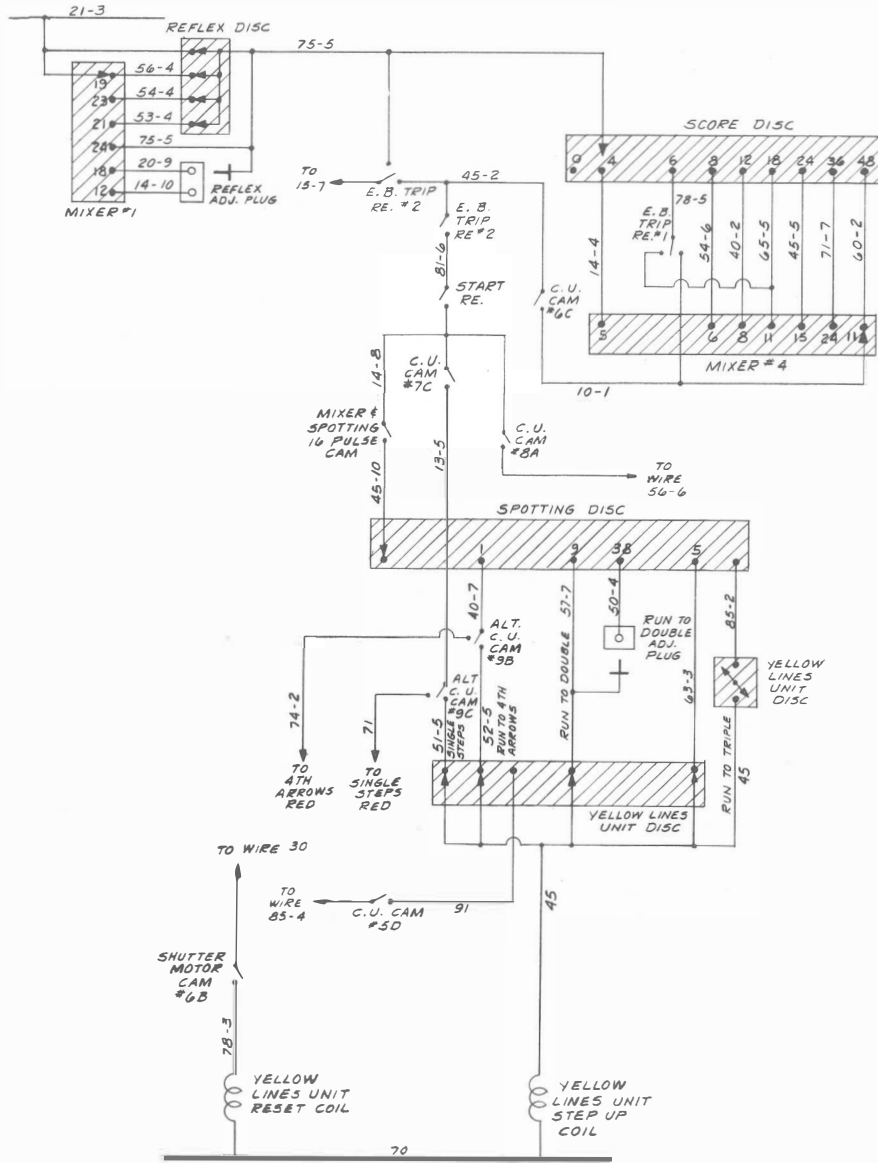
RED LINE UNIT STEP-UP AND RESET CIRCUIT



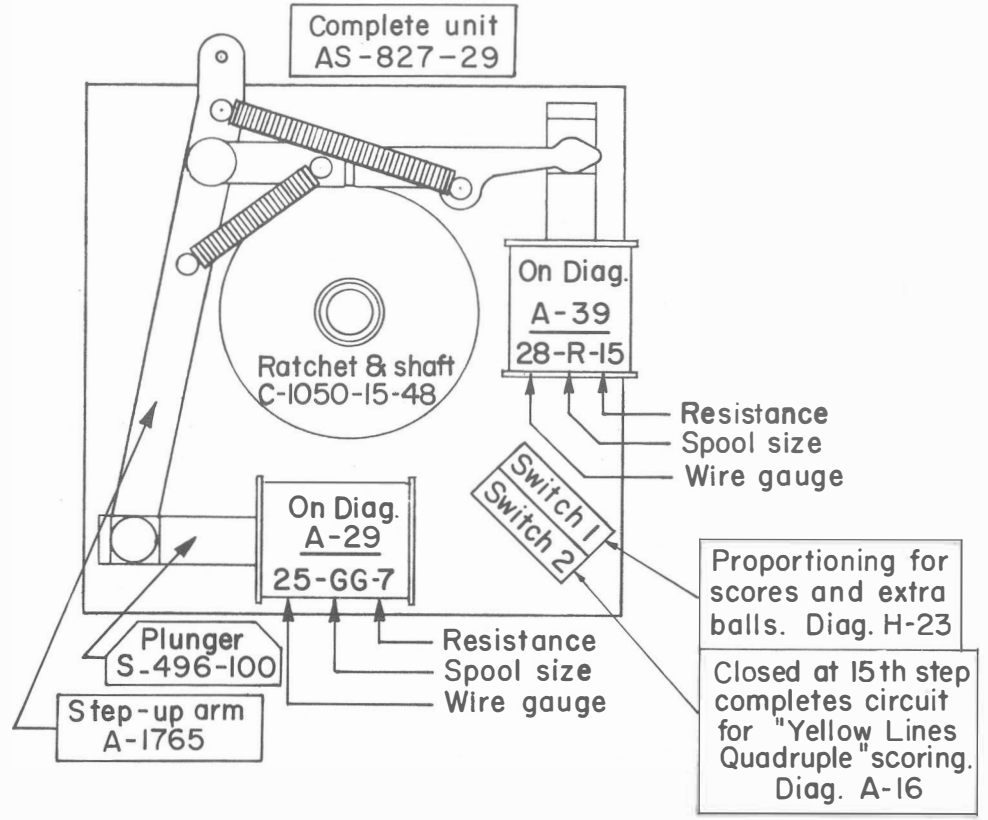
RED LINE UNIT viewed from COIL side



YELLOW LINE UNIT STEP-UP AND RESET CIRCUIT

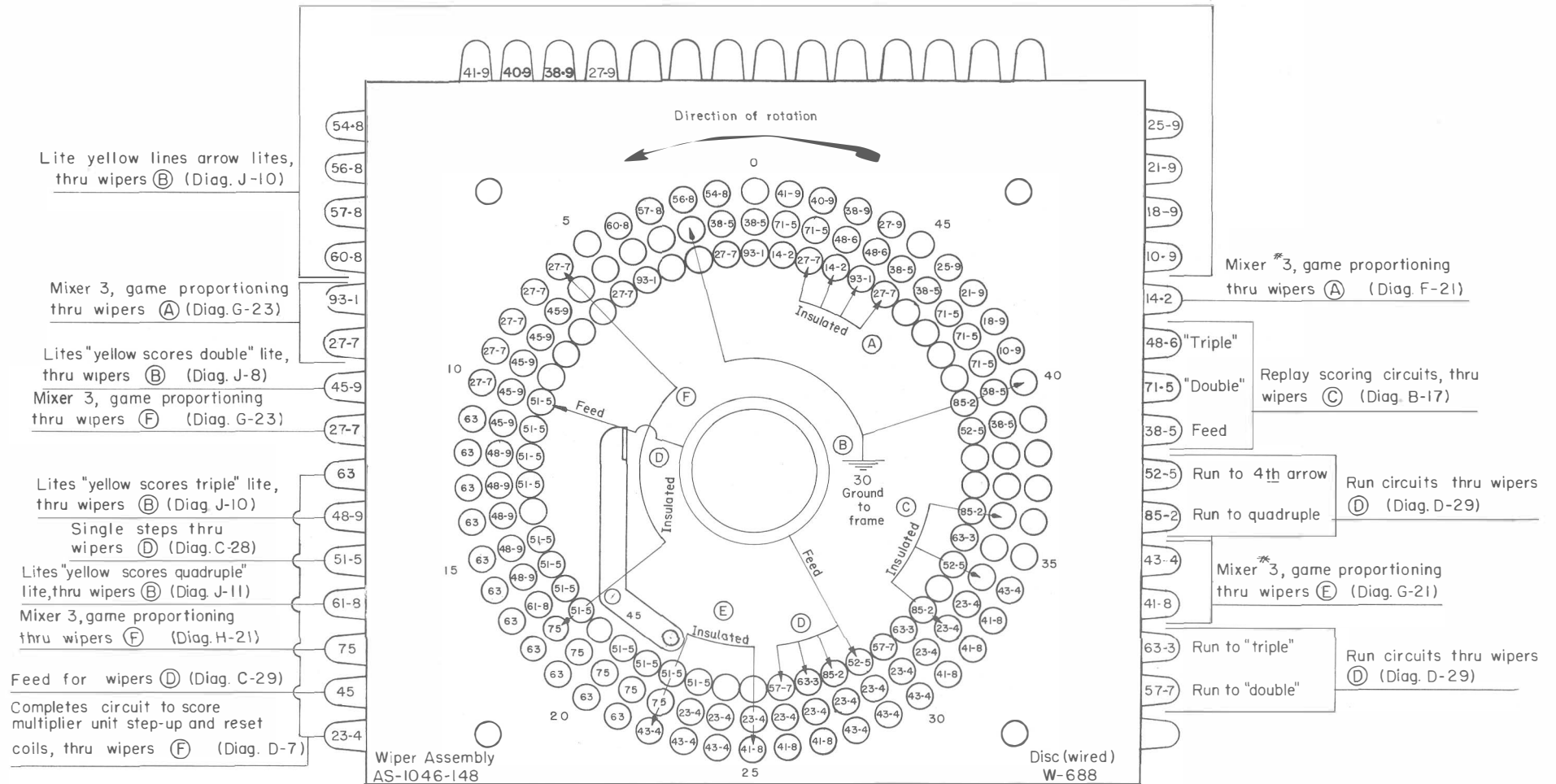


YELLOW LINE UNIT viewed from COIL side

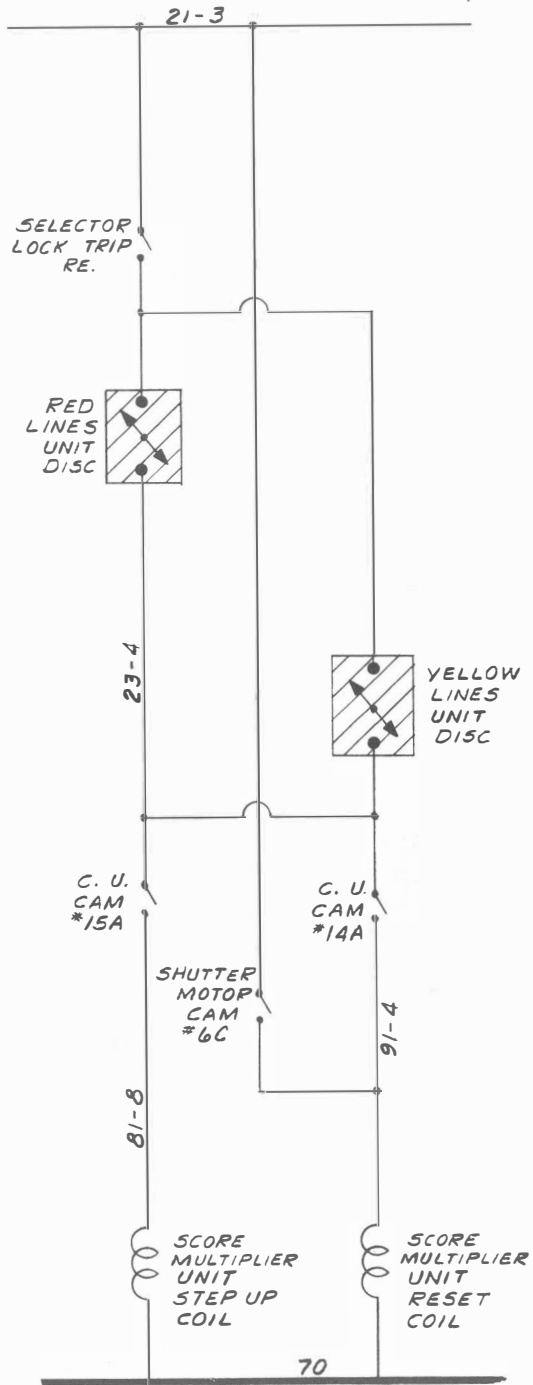


YELLOW LINE UNIT viewed from BUTTON or WIPER side

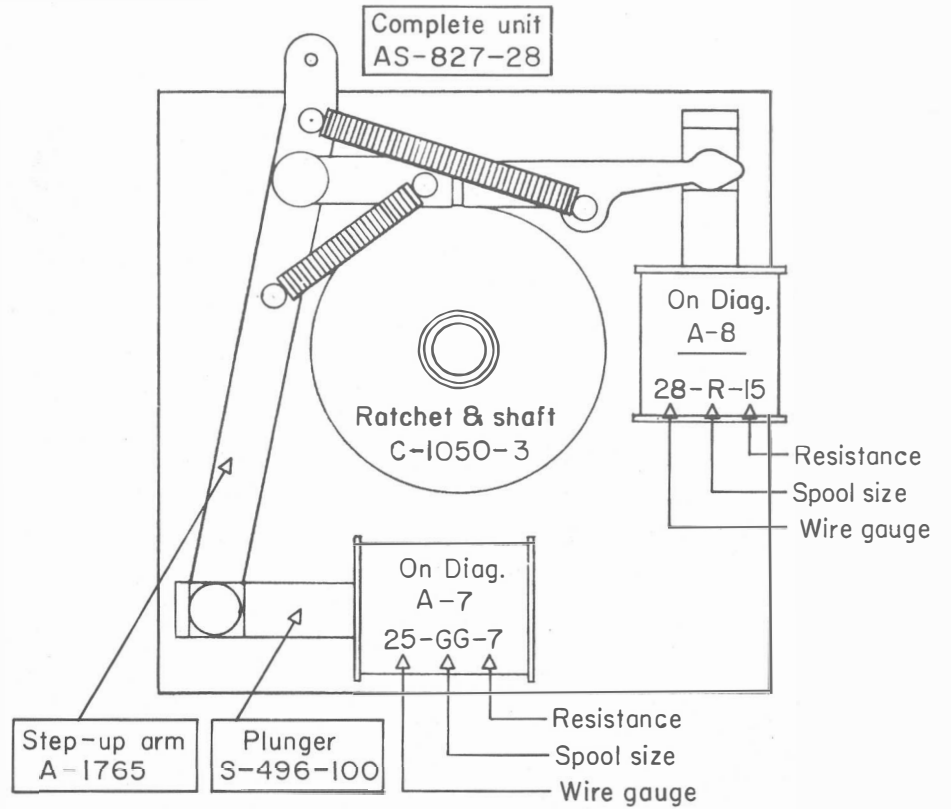
15 step unit. Wipers shown in zero or reset position



SCORE-MULTIPLIER UNIT STEP-UP AND RESET CIRCUIT

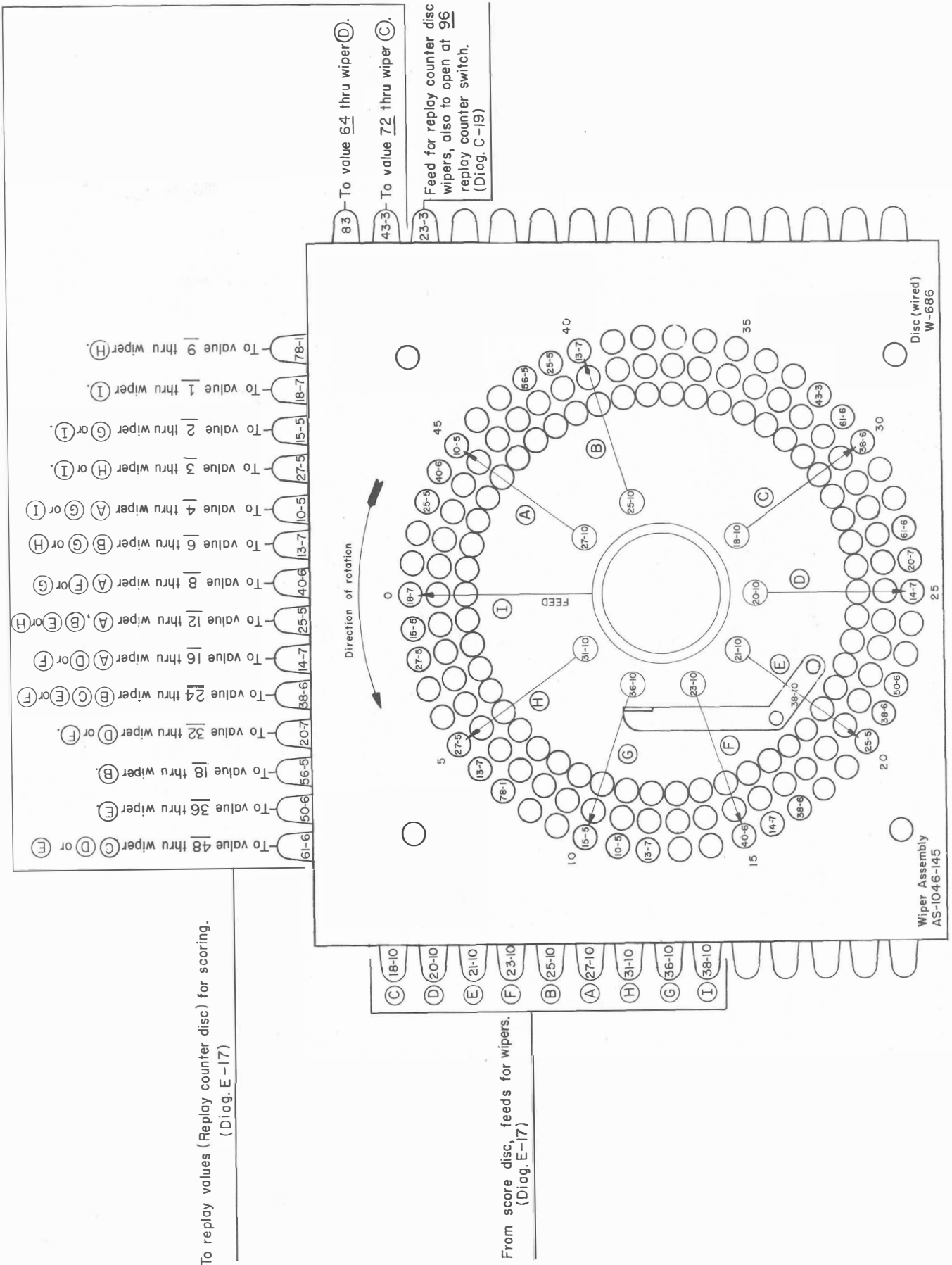


SCORE-MULTIPLIER UNIT viewed from COIL side

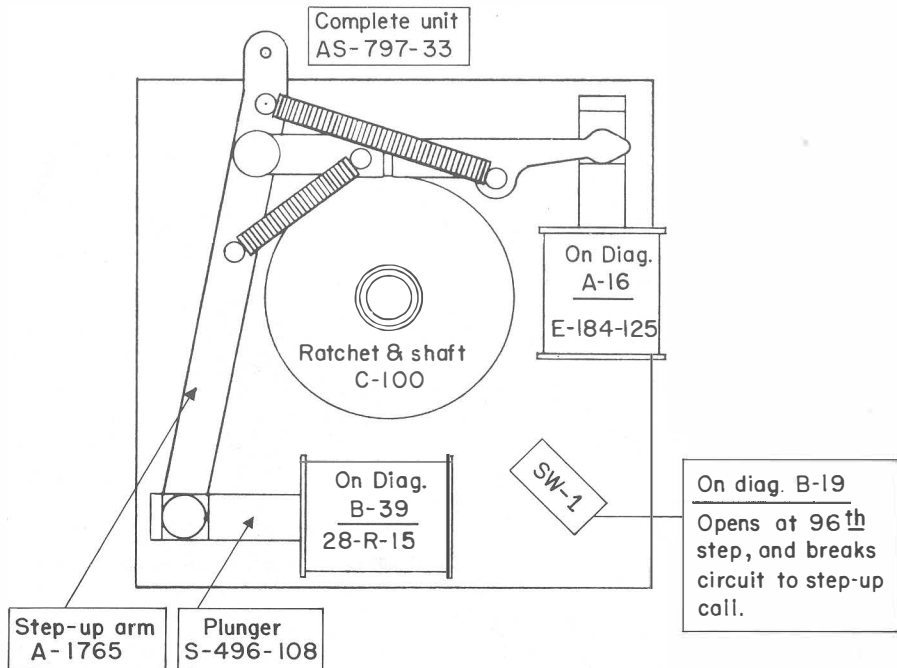


SCORE-MULTIPLIER UNIT viewed from **BUTTON** or **WIPER** side

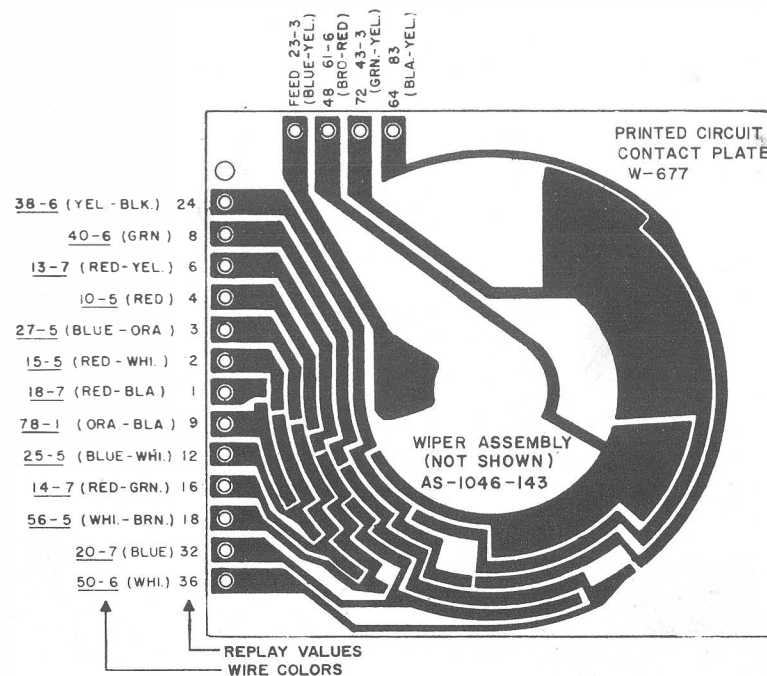
3 step unit. Wipers shown in zero or reset position



REPLAY COUNTER viewed from COIL side



REPLAY COUNTER viewed from WIPER side



CAM SWITCHES THAT PULSE REPLAY COUNTER STEP-UP COIL																																	
		SW. #12A				SW. #11A				SW. #12A				SW. #11A				SW. #11A				SW. #11A				SW. #10A							
		REGULAR	DOUBLE	TRIPLE	QUADRUPLE	REGULAR	DOUBLE	TRIPLE	QUADRUPLE	REGULAR	DOUBLE	TRIPLE	QUADRUPLE	REGULAR	DOUBLE	TRIPLE	QUADRUPLE	REGULAR	DOUBLE	TRIPLE	QUADRUPLE	REGULAR	DOUBLE	TRIPLE	QUADRUPLE	REGULAR	DOUBLE	TRIPLE	QUADRUPLE				
5	In-line	64 ⑩	128 ⑩	192 ⑩	256 ⑩	72 ⑩	144 ⑩	216 ⑩	288 ⑩	96 ⑩	192 ⑩	288 ⑩	384 ⑩ <small>See Note</small>	96 ⑩	192 ⑩	288 ⑩	384 ⑩	96 ⑩	192 ⑩	288 ⑩	384 ⑩	144 ⑩	288 ⑩	432 ⑩	576 ⑩ <small>See Note</small>	144 ⑩	288 ⑩	432 ⑩	576 ⑩ <small>See Note</small>	192 ⑩	384 ⑩	576 ⑩	768 ⑩
4	In-line	16 ④	32 ④	48 ④	64 ④	18 ③	36 ③	54 ③	72 ③	24 ③	48 ③	72 ③	96 ③	36 ③	72 ③	108 ③	144 ③	48 ③	96 ③	144 ③	192 ③	288 ③	216 ③	288 ③	384 ③	96 ③	192 ③	288 ③	384 ③	144 ③	288 ③	432 ③	576 ③
3	In-line	4 ①	8 ②	12 ③	16 ④	6 ①	12 ②	18 ③	24 ④	8 ②	16 ④	24 ⑥	32 ⑧	12 ②	24 ④	36 ⑥	48 ⑧	18 ③	36 ⑥	54 ⑨	72 ⑫	24 ④	48 ⑧	72 ⑫	96 ⑫	36 ⑥	72 ⑫	108 ⑫	144 ⑫	48 ④	96 ⑧	144 ⑫	192 ⑫

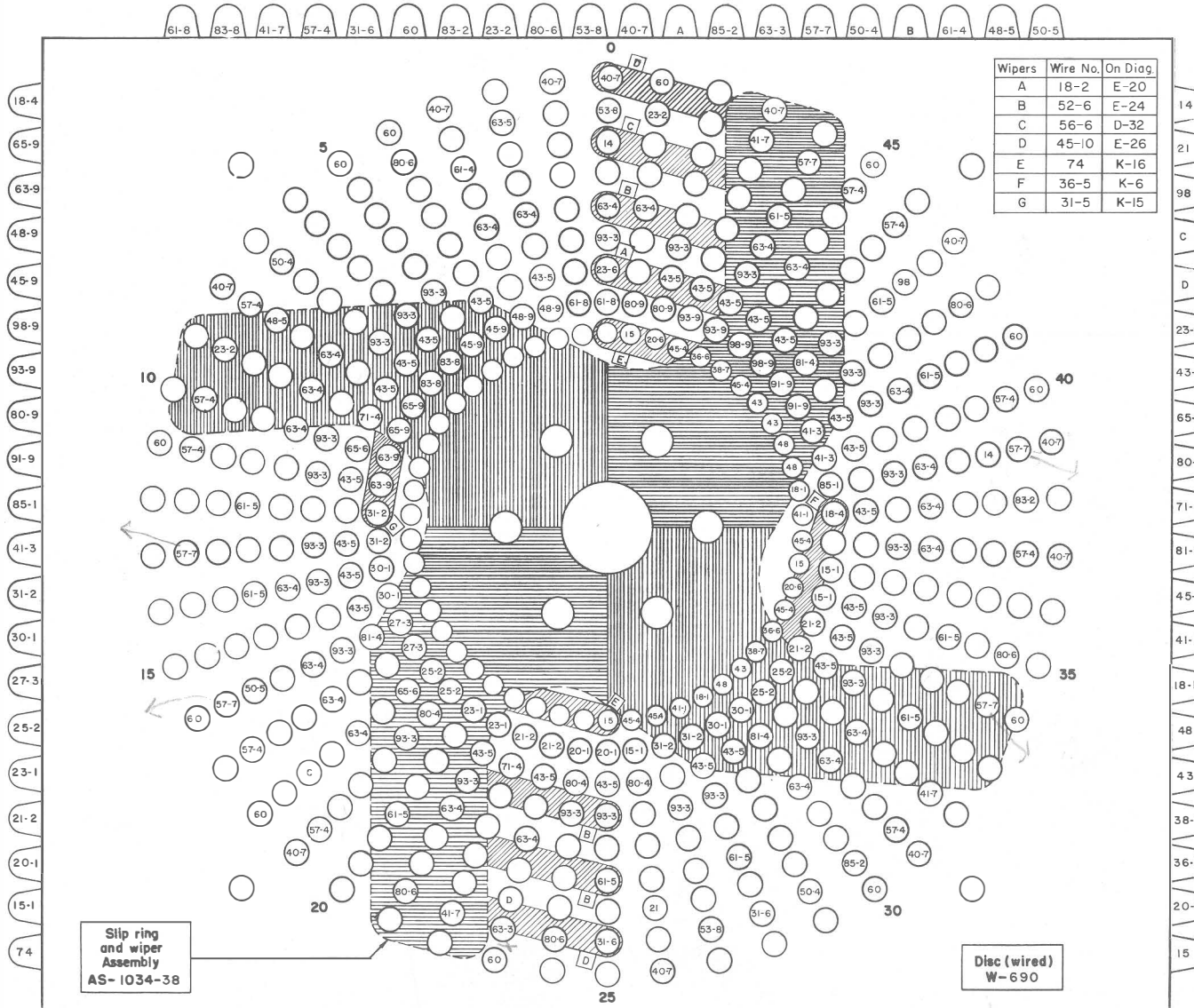
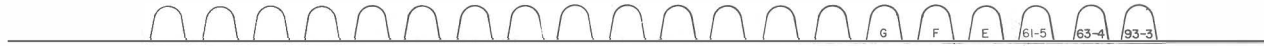
NOTE:
EFFECTIVE THRU OPEN AT 96
REPLAY COUNTER SWITCH.

LARGE NUMBERS ARE REPLAY SCORES FOR REGULAR, DOUBLE, TRIPLE, OR QUADRUPLE SCORING.
NUMBERS IN CIRCLES INDICATE WHICH PORTION OF REPLAY CIRCUIT STRIP IS EFFECTIVE FOR A PARTICULAR REGULAR, DOUBLE, TRIPLE, OR QUADRUPLE SCORE.

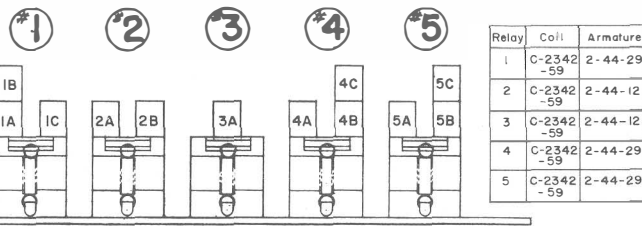
EXAMPLES: ON A REGULAR 3-IN-LINE SCORE OF → 24 REPLAYS
THE CIRCUIT IS EFFECTIVE THRU THE → ④ REPLAY CIRCUIT STRIP.

ON A QUADRUPLE 4-IN-LINE SCORE OF → 288 REPLAYS
THE CIRCUIT IS EFFECTIVE THRU THE → ④ REPLAY CIRCUIT STRIP.

SPOTTING DISC viewed from BUTTON or WIPER side



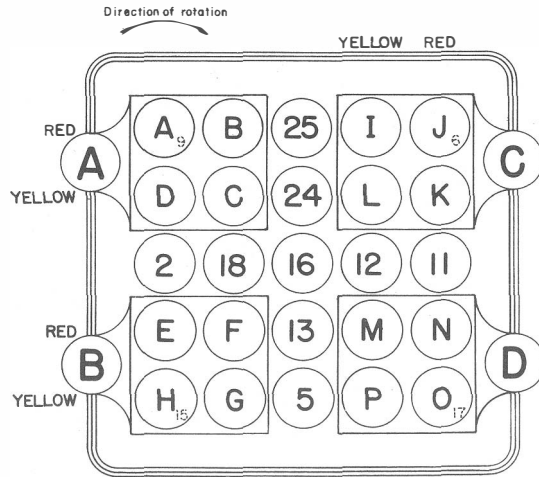
SEARCH RELAYS



Relay	Coil	Armature
1	C-2342-59	2-44-29
2	C-2342-59	2-44-12
3	C-2342-59	2-44-12
4	C-2342-59	2-44-29
5	C-2342-59	2-44-29

Corners Scores		3 in line scores		4 in line scores		5 in line scores		
Thru	Switch no's.	Wire no's. & color	Thru	Switch no's.	Wire no's. & color	Thru	Switch no's.	Wire no's. & color
3A	45-6	Green-white	3A	45-6	Green-white	3A	45-6	Green-white
	50-3	White		50-3	White		50-3	White
	51-3	White-red		51-3	White-red		51-3	White-red
2B	50-3	White	2A	50-3	White	2B	50-3	White
	51-3	White-red		52-3	White-blue		51-3	White-red
4B	51-3	White-red	1B	52-3	White-blue	4B	51-3	White-red
	53-3	White-yellow		65	Brown-white		53-3	White-yellow
1C	53-3	White-yellow	3A	45-6	Green-white	1C	45-6	Green-white
	71-3	Orange-red		50-3	White		71-3	Orange-red
3A	45-6	Green-white	2A	50-3	White	3A	45-6	Green-white
	50-3	White		52-3	White-blue		50-3	White
	51-3	White-red		65	Brown-white		51-3	White-red
2B	50-3	White	4A	52-3	White-blue	2B	50-3	White
	51-3	White-red		65	Brown-white		51-3	White-red
4B	51-3	White-red	3A	45-6	Green-white	4B	51-3	White-red
	53-3	White-yellow		50-3	White		53-3	White-yellow
5B	53-3	White-yellow	4C	50-3	White	5B	53-3	White-yellow
	71-3	Orange-red		56-3	White-brown		71-3	Orange-red
			5A	56-3	White-brown			
				65	Brown-white			

CARD LAYOUT
NEUTRAL POSITION



SCORING, REGULAR, DOUBLE, TRIPLE OR QUADRUPLE SCORES

Regular scores are completed thru the search disc between positions #47 to #36.

Double, triple, or quadruple scores may be registered in (2) different ways.

1. By registering regular score first, and then the remainder to complete either the double, triple or quadruple score.
2. By registering either the double, triple or quadruple score immediately without interruption (SEE EXPLANATION BELOW).

EXPLANATION OF
REGULAR, DOUBLE, TRIPLE OR QUADRUPLE SCORING

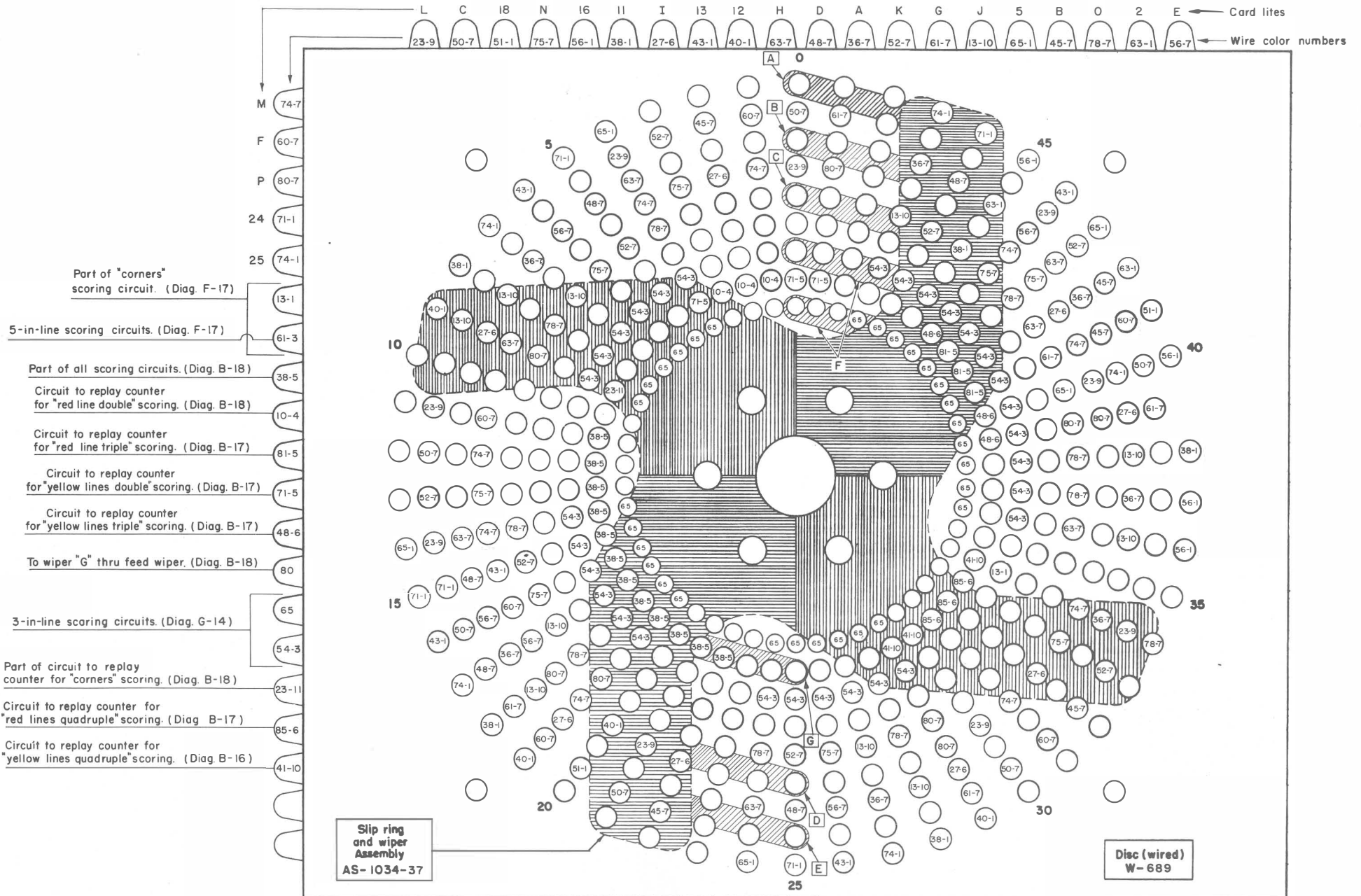
Regular scores are registered with the score multiplier unit at zero.
Double scores are registered with the score multiplier unit at its 1st step.
Triple scores are registered with the score multiplier unit at its 2nd step.
Quadruple scores are registered with the score multiplier unit at its 3rd step.

SEARCH POSITIONS

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

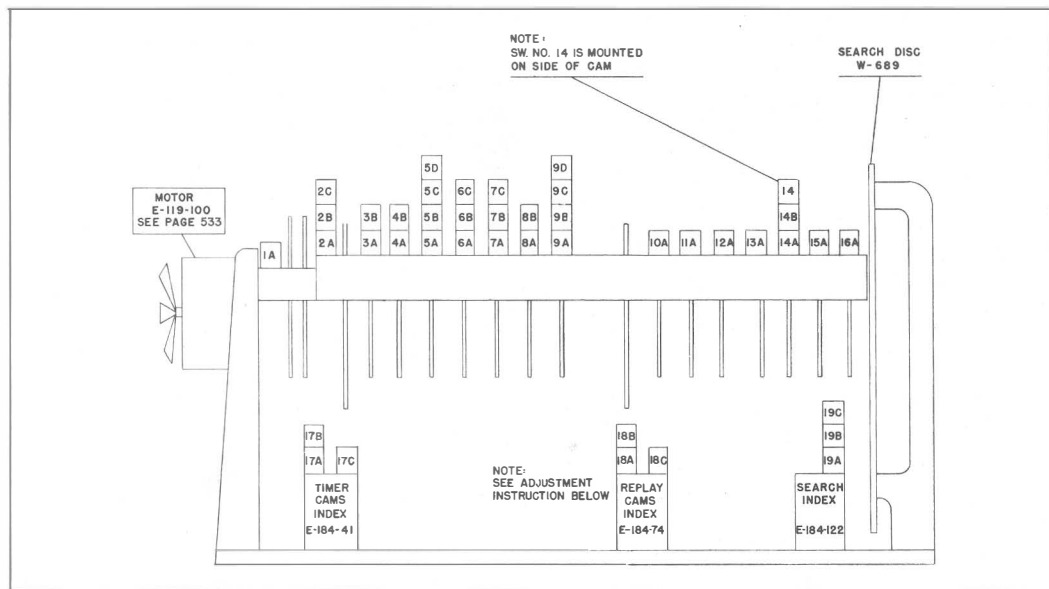
ROTATION OF SEARCH DISC WIPERS FROM 50 TO 1

SEARCH DISC viewed from BUTTON or WIPER side



CONTROL UNIT PICTORIAL VIEW

NUMBERS CORRESPOND TO SWITCH CHART

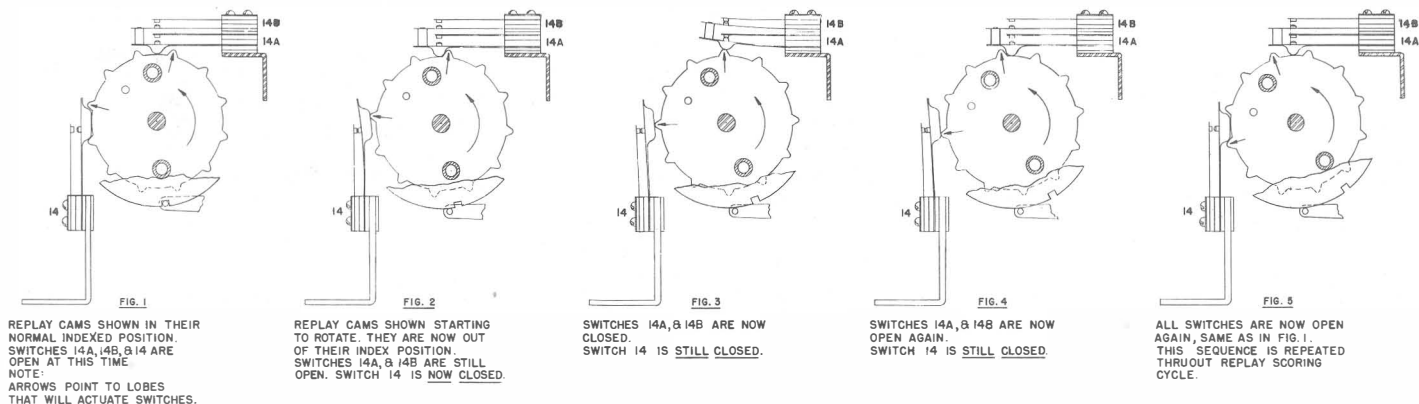


N.C.----- NORMALLY CLOSED
 N.O.----- NORMALLY OPEN
 M.B.B.----- MAKE BEFORE BREAK
 S.P.D.T.----- SINGLE POLE DOUBLE THROW

Note-It is important to adjust Replay Cams Index Switches No. 18A and No. 18B so that they make only when Replay Cams Index Coil is energized. When Replay Cams Index is de-energized, these Switches should remain open while Switch is riding on outer edge of cam.

CORRECT ADJUSTMENT: CONTROL UNIT CAM SWITCHES 14, 14A & 14B

Important part of illustration is to show that SWITCH 14 CLOSES FIRST AND OPENS LAST. If adjustment is necessary, Switch 14 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-8	65-2 36-9 Brown-White Yellow-Brown	Energizes timer step-up coil, when drag arm switch, selector lock #1 switch, and control unit cam switch #14B are closed.
2A	N.O.	I-3	90-5 30 Gray Yellow	Energizes reflex play magnet, replay register reset coil.
2B	N.O.	C-38	93-4 30 Gray-Yellow Yellow	Energizes coin kicker magnet.
2C	N.C.	E-10	57-6 31-7 White-Orange Yellow-Red	Drops out red button relay.

CONTINUED ON NEXT PAGE

CONTROL UNIT CAM SWITCH CHART — CONTINUED

CAM SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
3A N. C.	I-4	48-2 83-3	Green-Black Black-Yellow	Drops out start relay, and acts as safety switch during spin.
3B S. P. D. T.	B-14	93-7 98-1 91-7	Gray-Yellow Gray-Black Gray-Red	Directs circuit to replay meter, or total plays meter.
4A N. O.	D-5	14-9 80-2	Red-Green Black	Used if coin meter is added in front cabinet.
4B N. O.	D-39	98-1 30	Gray-Black Yellow	Energizes score extra step index, and control unit spotting index coils.
5A N. O.	G-8	65-2 71-8	Brown-White Orange-Red	Energizes timer reset coil.
5B N. O.	B-21	21-1 38-4	Blue-Red Yellow-Black	Energizes extra ball unit step-up coil. Steps unit from minus one to zero position.
5C N. O.	B-23	78-4 85-4	Orange-Black Black-White	Energizes anti-cheat relay.
5D N. O.	C-26	85-4 91	Black-White Gray-Red	"Magic squares" unit steps.
6A N. C.	D-23	25-3 43-8	Blue-White Green-Yellow	Score extra step safety switch.
6B N. C.	C-26	31-9 75-5	Yellow-Red Orange-White	Drops out features run relay.
6C N. C.	G-27	10-1 45-2	Red Green-White	Opens game advantage circuits, during timing cycle.
7A N. O.	B-24	18 52-2	Red-Black White-Blue	Score unit steps.
7B N. O.	E-28	13-5 14-8	Red-Yellow Red-Green	Pulse switch for "red" or "yellow" lines unit single steps.
7C N. O.	D-38	93-4 30	Gray-Yellow Yellow	(Safety switch) energizes coin kicker magnet.
8A N. O.	F-27	14-8 56-6	Red-Green White-Brown	Pulses "magic squares" unit for single steps. Also energizes "corners" "Bally-Hole" "select before 5th" and "select after 5th" relays, when circuit complete thru other factors.
8B N. O.	B-22	25-4 38-4	Blue-White Yellow-Black	Extra ball unit steps.
9A Alt.	E-23	43-8 85-4	Green-Yellow Black-White	Opens score extra step circuit every other time.
9B Alt.	E-29	52-5 40-7 74-2	White-Blue Green Orange-Green	Run to 4th arrow circuit, for "red" or "yellow" lines unit.
9C Alt.	D-28	51-5 13-5 71	White-Red Red-Yellow Orange-Red	Directs circuit for "red" or "yellow" lines unit single steps.
9D Alt.	H-24	23 65-4	Blue-Yellow Brown-White	Game proportioning switch.

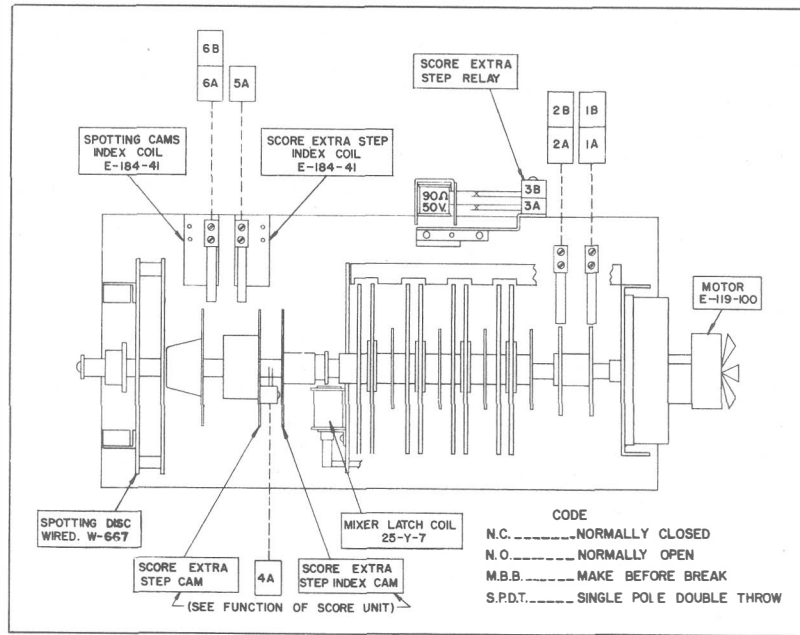
CONCLUDED ON NEXT PAGE

CONTROL UNIT CAM SWITCH CHART — CONCLUDED

CAM SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES	
10A	N. O.	B-16	20-3 56	Blue White-Brown	Pulses replay counter, when score unit is at 8th step.
11A	N. O.	B-15	20-3 91-6	Blue Gray-Red	Pulses replay counter, when score unit is at 2nd, 4th, 5th, 6th or 7th step.
12A	N. O.	B-15	20-3 93-5	Blue Gray-Yellow	Pulses replay counter, when score unit is at 1st or 3rd step.
13A	N. O.	C-13	48-4 80	Green-Black Black	Pulses replay register step-up coil, and reflex replay magnet.
14A	N. O.	I-14	56-7 93	White-Brown Gray-Yellow	Prevents the start of another replay scoring, when control unit cams are indexed.
14B	N. C.	C-8	27-2 90-2	Blue-Orange Gray	Opens circuit to timer step-up coil during replay winner.
14Backside)	N. O.	E-13	21-3 27	Blue-Red Blue-Orange	Replay lock-in switch. NOTE: See control unit pictorial view.
15A	N. O.	C-8	23-4 91-4	Blue-Yellow Gray-Red	Completes circuit to score "multiplier unit" reset coil, thru "red" or "yellow" lines unit disc.
16A	N. O.	C-7	23-4 81-8	Blue-Yellow Black-Red	Completes circuit to "score multiplier" unit step-up coil, thru "red" or "yellow" lines unit disc.
TIMER CAMS INDEX COIL	A-6	93-2 70	Gray-Yellow Orange	Energized by switch on start relay. Also thru shutter motor cam switch #5C.	
17A	N. O.	G-1	20-P 60-P	Blue (plastic) Brown (plastic)	Operates control, magic squares, and mixer and spotting unit motors.
17B	N. C.	G-5	14-9 71-2	Red-Green Orange-Red	Opens circuit to coin lock-out magnet during spin.
17C	N. C.	D-10	13 30	Red-Yellow Yellow	Lock-in safety switch for red button relay.
RELAY CAMS INDEX COIL	A-13	40-4 70	Green Orange	Energized when 3-in-line or more is scored, and releases replay cams.	
18A	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.
18B	N. O.	I-15	56-7 93	White-Brown Gray-Yellow	In series with replay winner circuit. NOTE: See control unit pictorial view for correct adj.
18C	N. C.	C-12	15-2 80	Red-White Black	Opens direct 50 volt circuit to search index coil, coil then held in thru resistor.
SEARCH INDEX COIL	A-13	15-2 70	Red-White Orange	Energized when 3-in-line or more is scored.	
19A	N. O.	K-34	10 41-2	Red Green-Red	Completes circuit to #3 search relay for scoring, and acts as safety switch.
19B	N. O.	B-13	40-4 80	Green Black	Energizes replay cams index, if score is made.
19C	N. C.	I-4	83-3 30	Black-Yellow Yellow	Opens start circuit, and acts as safety switch.

MIXER AND SPOTTING UNIT ASSEMBLY

Numbers correspond to switch chart below

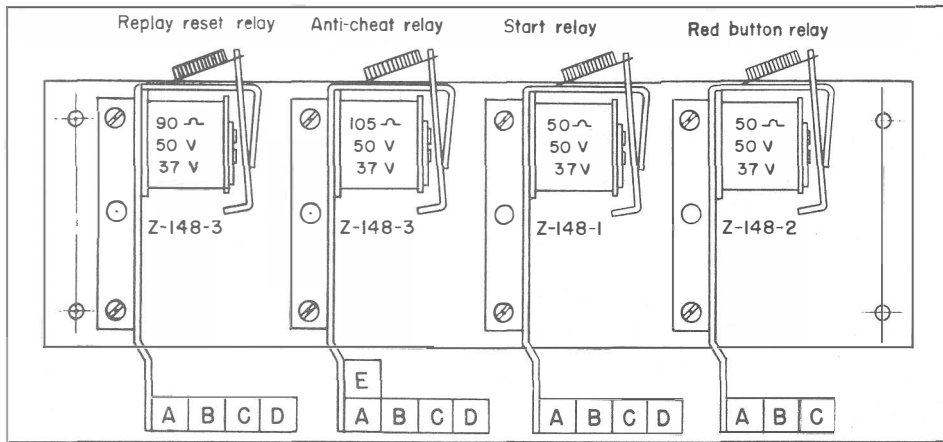


MIXER AND SPOTTING UNIT SWITCH CHART

FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW ABOVE

CAM SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES	
1A	N.O.	G-26	14-8 45-10	Red-Green Green-White	Pulses "red-lines" "yellow-lines" and "magic squares" step-up coils 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.
SCORE EXTRA STEP RELAY COIL	A-25	43-6 70	Green-Yellow Orange	Energized by score unit step-up arm switch.	
3A	N.O.	B-25	81-1 43-6	Black-Red Green-Yellow	Part of lock-in circuit for this relay.
3B	N.O.	B-23	40-5 52-2	Green White-Blue	Completes circuit to score unit step-up coil for multiple steps.
4A	N.O.	C-23	25-3 40-5	Blue-White Green	Pulses score unit step-up coil for multiple steps.
SCORE EXTRA STEP INDEX COIL	A-39	98-1 70	Gray-Black Orange	Energized during timing cam cycle by control unit cam switch #4B.	
5A	N.O.	C-25	75-5 81-1	Orange-White 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 #4B.	
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.

4 RELAY BANK PICTORIAL VIEW NUMBERS CORRESPOND TO SWITCH CHART



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

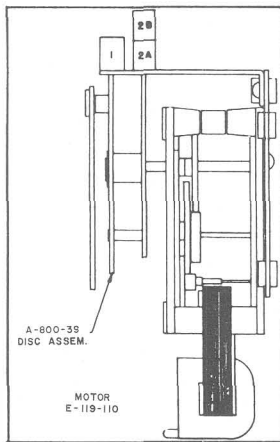
4 RELAY BANK SWITCH CHART FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
REPLAY RESET RELAY COIL	A-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-23	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.	C-23	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.	M-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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4 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-27	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.



BALL LIFT MOTOR PICTORIAL VIEW

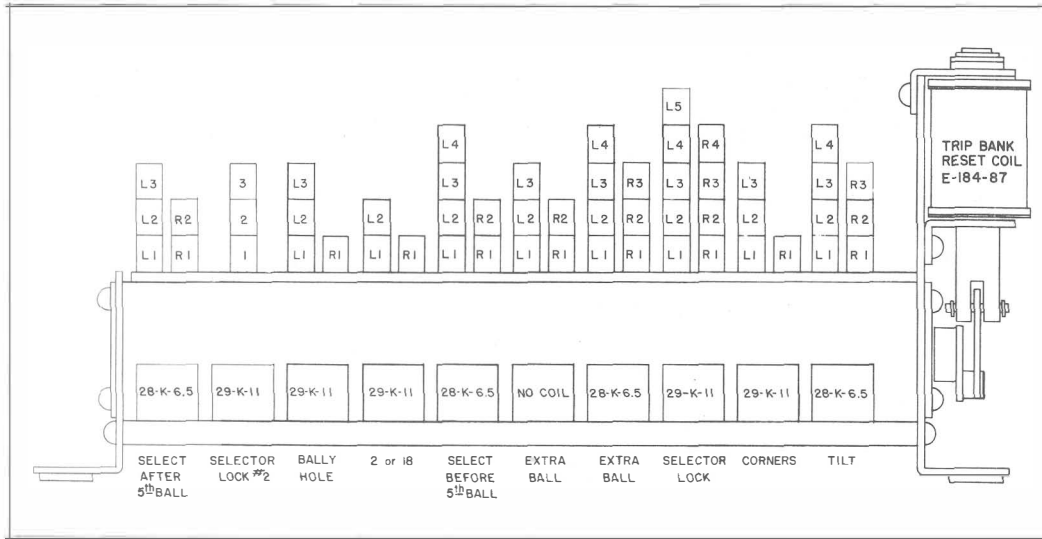
NUMBERS CORRESPOND TO SWITCH CHART BELOW

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

GAM 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-8	43-2 27-2	Green-Yellow Blue-Orange	Energizes timer unit step-up coil.
2B N. O.	F-9	53-6 98-3	White-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

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

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
SELECT AFTER 5th BALL TRIP COIL	A-34	65-3 70	Brown-White Orange	Energized by control unit cam switch #8A, when spotting wipers stop on correct position.
L1 S.P.D.T.	B-34	65-3 98 21	Brown-White Gray-Black Blue-Red	Breaks circuit to this coil, and completes circuit to "select before 5th" ball trip relay coil.
L2 N.C.	J-1	10-2 54-2	Red White-Green	Prevents "select now" lite from flashing at 4th or 5th step of timer unit, when this relay is energized.
L3 N.O.	H-35	41-5 60-3	Green-Red Brown	Keeps circuit to "magic squares" buttons alive, when this relay is energized.
R1 S.P.D.T.	K-4	25 91-9 41-3	Blue-White Gray-Red Green-Red	Breaks circuit to "select before 5th ball feature" lite, and completes circuit to "select after 5th ball feature" lite.
R-2 N.O.	K-1	40-3 57-2	Green White-Orange	Completes circuit to flash "select now" lite, when this relay is energized.
#2 SELECTOR LOCK TRIP COIL	A-9	J 70	Jumper Orange	Energized by switch on selector lock #1 when 6th ball is raised (1st extra ball), if "select after 5th ball feature" has been used.
L1 N.C.	L-2	40-3 53-2	Green White-Yellow	Breaks flash circuit to "select now" lite, when this relay is energized.
L2 N.C.	B-9	48-3 J	Green-Black Jumper	Breaks circuit to this coil.
L3 N.C.	H-35	60-3 61	Brown Brown-Red	Breaks circuit to "magic squares" buttons, when this relay is energized.

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TRIP RELAY BANK CHART — CONTINUED

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
BALLY HOLE TRIP COIL	A-33	J 70	Jumper Orange	Energized by control unit cam switch #8A, when spotting wipers stop on correct position.
L1 N. O.	D-19	50-8 91-5	White Gray-Red	Completes circuit to extra ball unit step-up coil.
L2 N. O.	J-6	18-4 30	Red-Black Yellow	Lites "Bally-Hole" feature lite.
L3 N. C.	B-33	14 J	Red-Green Jumper	Breaks circuit to this coil.
R1 N. C.	H-25	15-7 41	Red-White Green-Red	Game proportioning switch.
SPOT #2 OR #18 TRIP COIL	A-32	J 70	Jumper Orange	Energized at 5th step of "magic squares" feature unit, thru mixer #2.
L1 S. P. D. T.	J-32	63-1 52-8 51-1	Brown-Yellow White-Blue White-Red	Breaks circuit to #2 lite, and completes circuit to #18 lite in (card).
L2 N. C.	B-32	23-5 J	Blue-Yellow Jumper	Breaks circuit to this coil.
R1 S. P. D. T.	K-5	14-1 93-9 20-8	Red-Green Gray-Yellow Blue	Breaks circuit to "spot" #2 feature lite, and completes circuit to "spot" #18 feature lite.
SELECT BEFORE 5th BALL TRIP COIL	A-34	J 70	Jumper Orange	Energized by control unit cam switch #8A, when spotting wipers stop on correct position.
L1 S. P. D. T.	J-1	36-2 10-2 38-2	Yellow-Brown Red Yellow-Black	Directs circuit to flash "select now" lite at either the 4th or 5th step of timer unit.
L2 N. C.	G-24	15-7 74-4	Red-White Orange-Green	Proportioning for scores and extra ball steps.
L3 N. C.	B-34	21 J	Blue-Red Jumper	Breaks circuit to coil.
L4 S. P. D. T.	G-9	53-6 30 20-2	White-Yellow Yellow Blue	Directs circuit to energize selector lock #1 at either the 4th or 5th step of timer unit, also to energize selector lock #2 when 6th ball is raised (1st extra ball) if select after 5th ball feature has been used.
R1 S. P. D. T.	K-4	85-9 80-9 91-9	Black-White Black Gray-Red	Directs circuit to lite either the "select before 4th," "select before 5th" or "select after 5th" feature lite.
R2 N. O.	G-8	81-2 43-2	Black-Red Green-Yellow	Keeps circuit to ball lifter cam switch alive.
EXTRA BALL TRIP				NOTE: Both extra ball trip relays work off 1 coil.
L1 N. O.	J-22	21-4 30	Blue-Red Yellow	Lites extra ball 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.	F-22	52-6 27-7 18-2	White-Blue Blue-Orange Red-Black	Shuts off score steps, and further completes circuit for extra ball steps.
R1 S. P. D. T.	G-28	10-1 78-5 65-5	Red Orange-Black Brown-White	Extra ball proportioning switch.
R2 N. O.	H-24	23 57-7	Blue-Yellow White-Orange	Proportioning switch.

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TRIP RELAY BANK CHART — CONTINUED

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
EXTRA BALL TRIP COIL	A-10	25-7 70	Blue-White Orange	Energized by yellow button.
L1 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.
L2 N. C.	G-10	31-8 25-7	Yellow-Red Blue-White	Breaks circuit to this coil.
L3 N. C.	H-27	45-2 81-6	Green-White Black-Red	Breaks circuit to game advantages, when playing extra balls.
L4 S.P.D. T.	J-18	31-5 13-4 74	Yellow-Red Red-Yellow Orange-Green	Breaks score lites, flash circuit, and completes extra ball lites flash circuit, when playing for extra balls.
R1 S.P.D. T.	H-26	75-5 15-7 45-2	Orange-White Red-White Green-White	Extra ball proportioning switch.
R2 N. C.	J-6	36-5 83-1	Yellow-Brown Black-Yellow	Breaks game advantages flash circuit, when playing for extra balls.
R3 N. O.	D-12	91-1 38-3	Gray-Red Yellow-Black	Completes circuit to ball lifter motor, when playing for extra balls.
#1 SELECTOR LOCK TRIP COIL	A-9	J 70	Jumper Orange	Energized by 4th or 5th step of timer unit, directed by "select before 5th" relay switch.
L1 N. O.	E-4	18-6 50-2	Red-Black White	Completes circuit to make "yellow" button alive.
L2 N. O.	E-8	27-2 78-6	Blue-Orange Orange-Black	Completes circuit to timer unit step-up coil.
L3 N. O.	I-15	45-6 56-7	Green-White White-Brown	In series with replay scoring circuit.
L4 N. O.	B-10	25-8 31-8	Blue-White Yellow-Red	Completes circuit to extra ball trip relays.
L5 N. O.	B-9	48-3 52	Green-Black White-Blue	Completes circuit to energize selector lock #2, when 6th ball (1st extra ball) is raised, if "select after 5th ball" feature has been used.
R1 S.P.D. T.	J-1	54-2 80-9 57-2	White-Green Black White-Orange	Breaks circuit to flash "select now" lite at 4th or 5th step of timer unit, and completes circuit to flash "select now" lite when select after 5th ball feature is made.
R2 N. C.	B-9	75-3 J	Orange-White Jumper	Breaks circuit to this coil.
R3 N. O.	F-7	21-3 63	Blue-Red Brown-Yellow	Completes circuit to "score multiplier" unit step-up and reset coils, thru "red" or "yellow" lines unit disc.
CORNERS TRIP COIL	A-33	J 70	Jumper Orange	Energized by control unit cam switch #8A, when spotting disc wipers stop on correct positions.
L1 N. O.	J-6	85-1 30	Black-White Yellow	Lites "corners" feature lite.
L2 N. O.	G-16	13-1 71-3	Red-Yellow Orange-Red	In series with "corners" replay scoring circuit.
L3 N. C.	B-33	61-4 J	Brown-Red Jumper	Breaks circuit to this coil.
R1 N. O.	C-18	23-11 38-5	Blue-Yellow Yellow-Black	In series with "corners" replay scoring circuit.

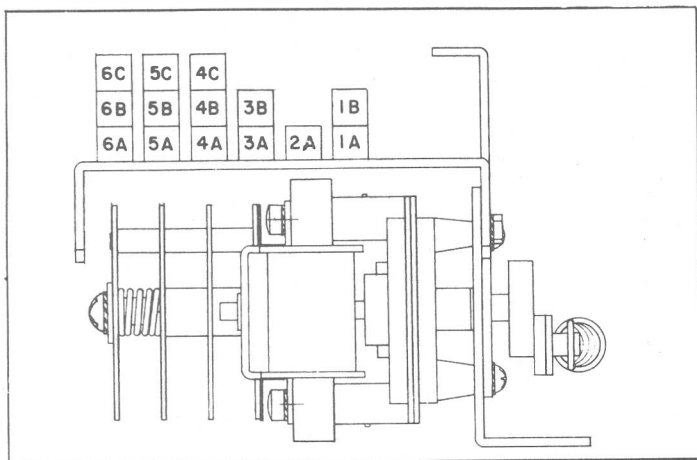
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TRIP RELAY BANK CHART — CONCLUDED

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
TILT TRIP COIL	A-11	14-5 70	Red-Green Orange	Energized by any tilt switch, or the plumb bob, and 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 game advantages, replay scoring, and ball counting circuits, 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.
L3 N.C.	M-23	20-4 10	Blue Red	Breaks 17 volt circuit.
L4 S.P.D.T.	M-22	38 81 91-2	Yellow-Black Black-Red Gray-Red	Breaks 6 volt circuit, and lites tilt lite.
R1 N.O.	E-11	57-6 85-7	White-Orange Black-White	Safety circuit for red button relay.
R2 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



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

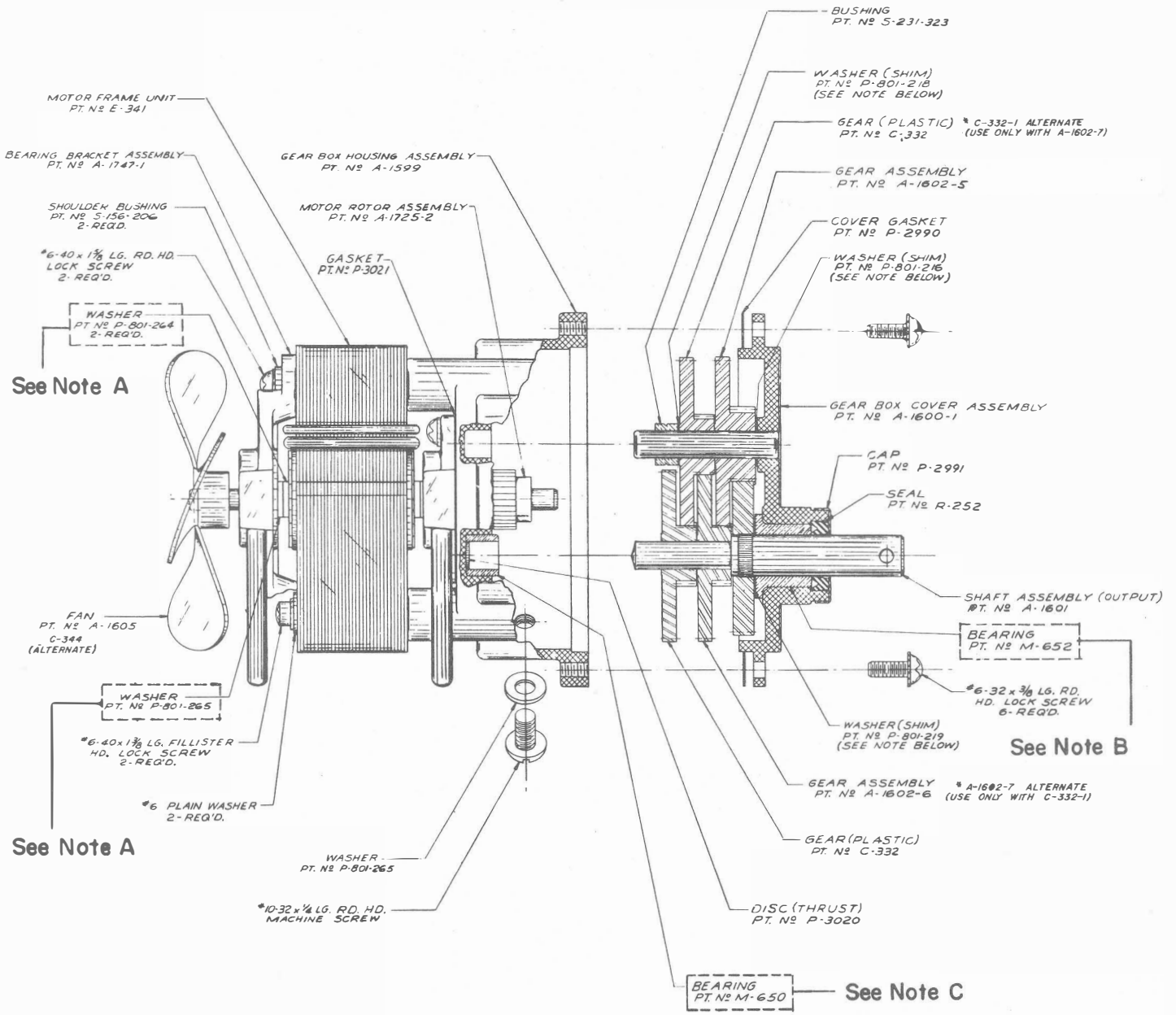
CAM SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
1A N.C.	I-13	93 21-3	Gray-Yellow Blue-Red	Completes circuit to replay scoring circuit.
1B N.O.	G-6	30 14-3	Yellow Red-Green	Carry thru for shutter motor.
2A N.C.	F-12	31-3 36-3	Yellow-Red Yellow-Brown	Completes circuit to ball lifter motor (closed normally) open during shutter cycle.
3A N.O.	C-39	30 85-5	Yellow Black-White	Resets score, extra ball, and "magic squares" feature unit.
3B N.O.	H-2	20-P 70-P	Blue (Plastic) Brown (Plastic)	Resets trip relay bank.

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SHUTTER MOTOR CAM SWITCH CHART — CONCLUDED

CAM SWITCH		LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
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-34	83-3 40-8	Black-Yellow 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.
5A	N. C.	H-8	21-3 65-2	Blue-Red Brown-White	Safety switch for timer reset.
5B		E-19	91-5 36-4	Gray-Red Yellow-Brown	(Closed when shutter is closed) Part of "Bally-Hole" extra ball step-up circuit.
5C	S. P. D. T.	E-6	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 replay counter, also "red lines" unit and "yellow lines" unit.
6C	N. O.	B-7	21-3 91-4	Blue-Red Gray-Red	Resets "Score Multiplier Unit"

MOTOR ASSEMBLY (Part No. E-119-100)



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; Washers P-801-264 and P-801-265 are parts of Motor Rotor Assembly A-1725-2 and cannot be ordered separately.

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

NOTE C; 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-251	Back glass
M-281-14	Lock and Keys (2) keyed alike
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-429-14	Ball trough only
P-1900-18	Cash box
E-130-10	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 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	Coin for coin kicker assembly
E-101-45	Coil for coin lockout
AS-1316	Coin kicker assembly
AS-277-26	Coin switch assembly 5¢
AS-277-27	Coin switch assembly 10¢
CA-567-27	Front door only
AS-1541	Front door assembly 5¢
AS-1541-1	Front door assembly 10¢
A-254-33	Hinge and bracket
M-281-6	Lock and keys
E-108-32	Micro switch—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
M-280-15	Slug rejector 5¢
M-280-16	Slug rejector 10¢

Front Moulding Assembly:

A-1272-13	"A" Button
A-1272-14	"B" Button
A-1272-15	"C" Button
A-1272-16	"D" Button
P-2210-8	5¢ coin entry plate
P-2210-9	10¢ coin entry plate
CA-773-2	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.