

# Bally<sup>®</sup>

## LITE-A-LINE

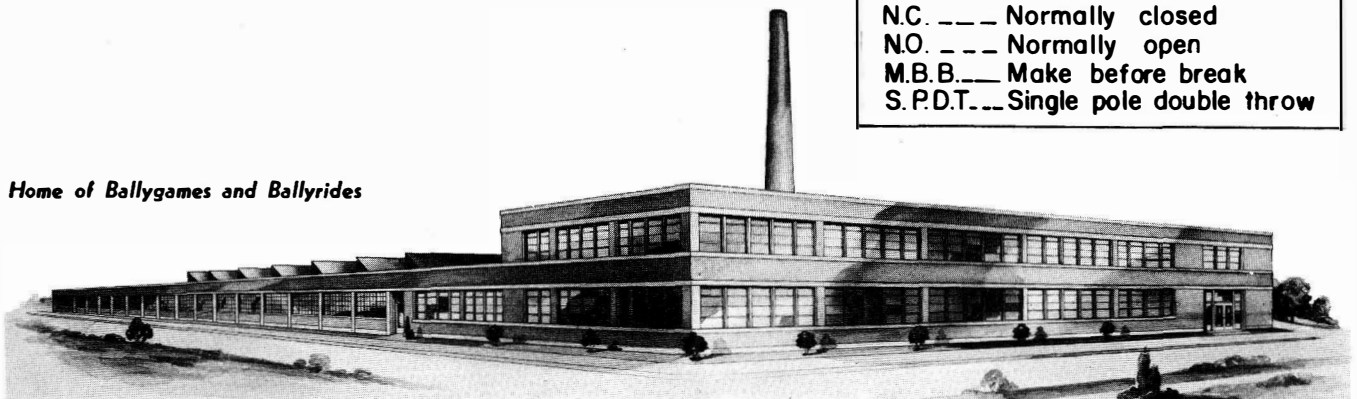
### OPERATING INSTRUCTIONS AND PARTS CATALOG

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

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

Code	
N.C. ---	Normally closed
N.O. ---	Normally open
M.B.B. ---	Make before break
S.P.D.T. ---	Single pole double throw

*Home of Ballygames and Ballyrides*





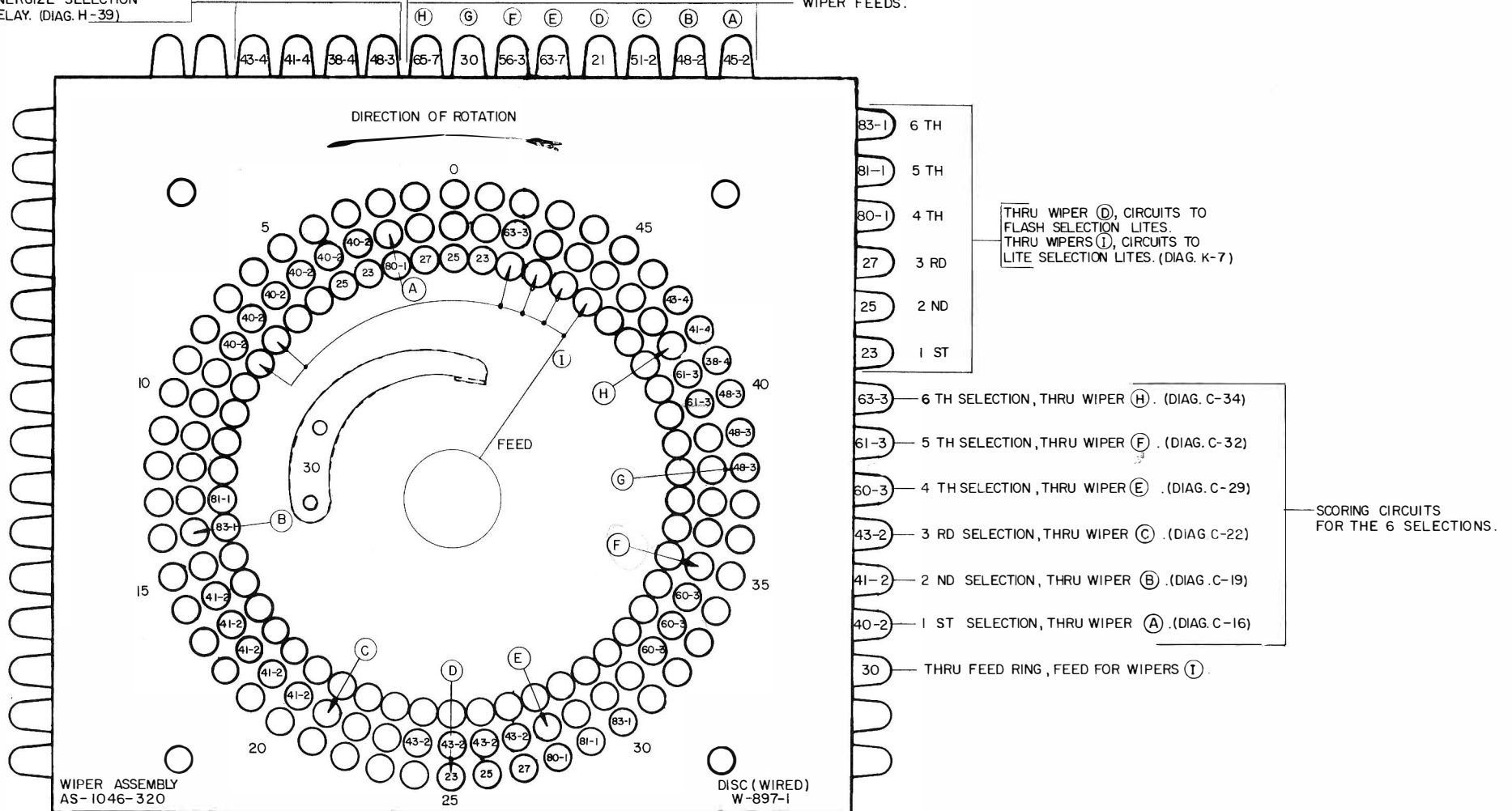
5	1	9	25	3
8	22	10	19	7
6	18	16	11	17
24	21	14	20	13
12	23	2	4	15
FIRST				
9	24	16	4	6
13	19	14	20	25
2	18	15	17	17
1	22	11	21	8
10	7	5	23	1
SECOND				
7	7	10	4	9
24	21	18	22	8
15	14	17	11	2
13	20	17	19	23
8	25	16	1	5
THIRD				
6	7	3	24	1
23	14	17	18	2
5	19	20	16	22
11	17	7	15	25
10	13	21	4	8
FOURTH				
8	22	10	13	4
2	17	16	14	24
20	12	22	19	5
25	15	4	11	1
7	21	1	1	1
FIFTH				
1	6	1	23	3
25	15	3	17	13
9	10	13	17	20
10	10	13	14	4
7	24	17	7	11
SIXTH				

# SELECTION UNIT DISC viewed from BUTTON or WIPER side

6 step unit. Wipers shown in zero or reset position

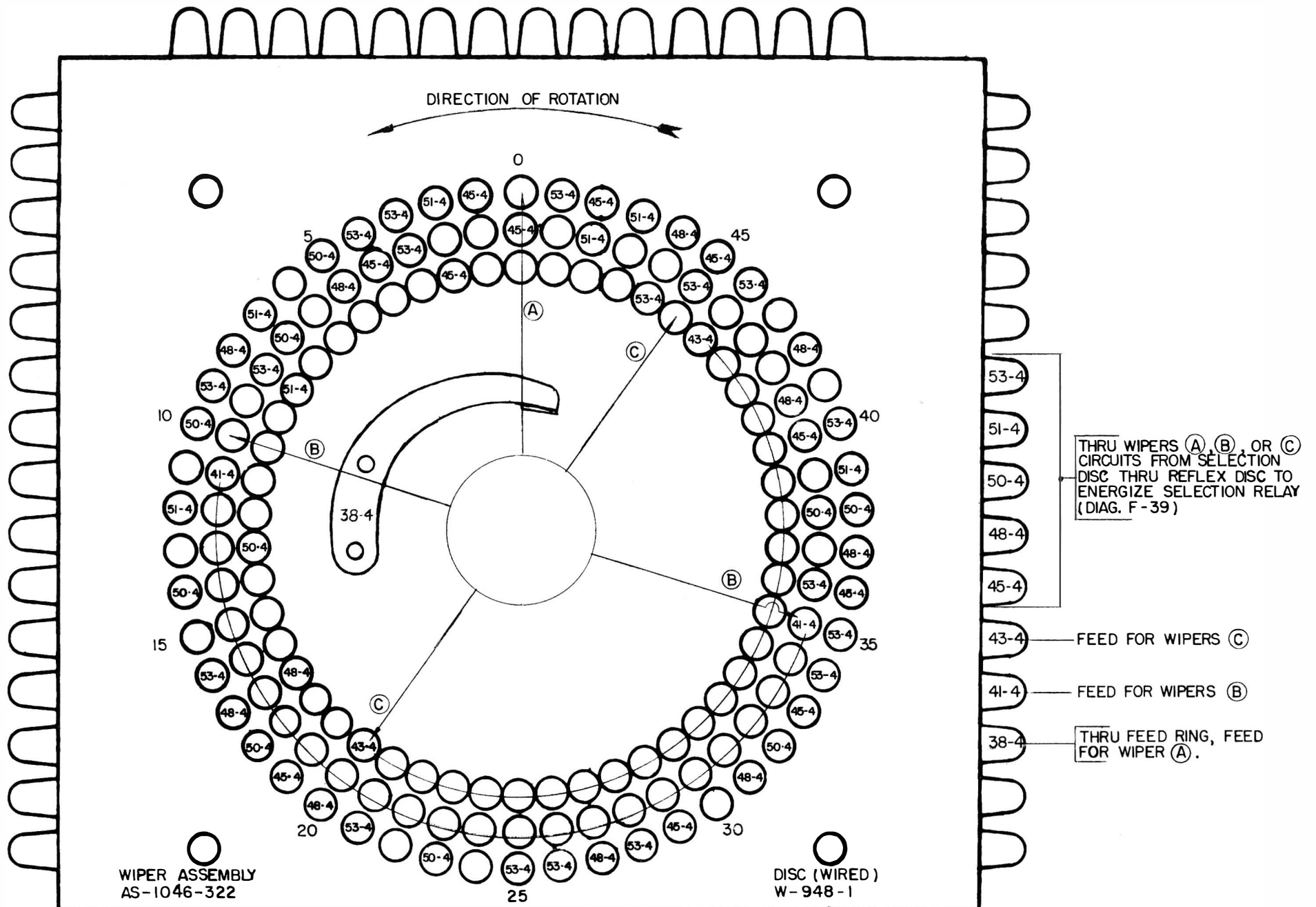
THRU WIPER (G), CIRCUITS TO ENERGIZE SELECTION RELAY. (DIAG. H-39)

WIPER FEEDS.



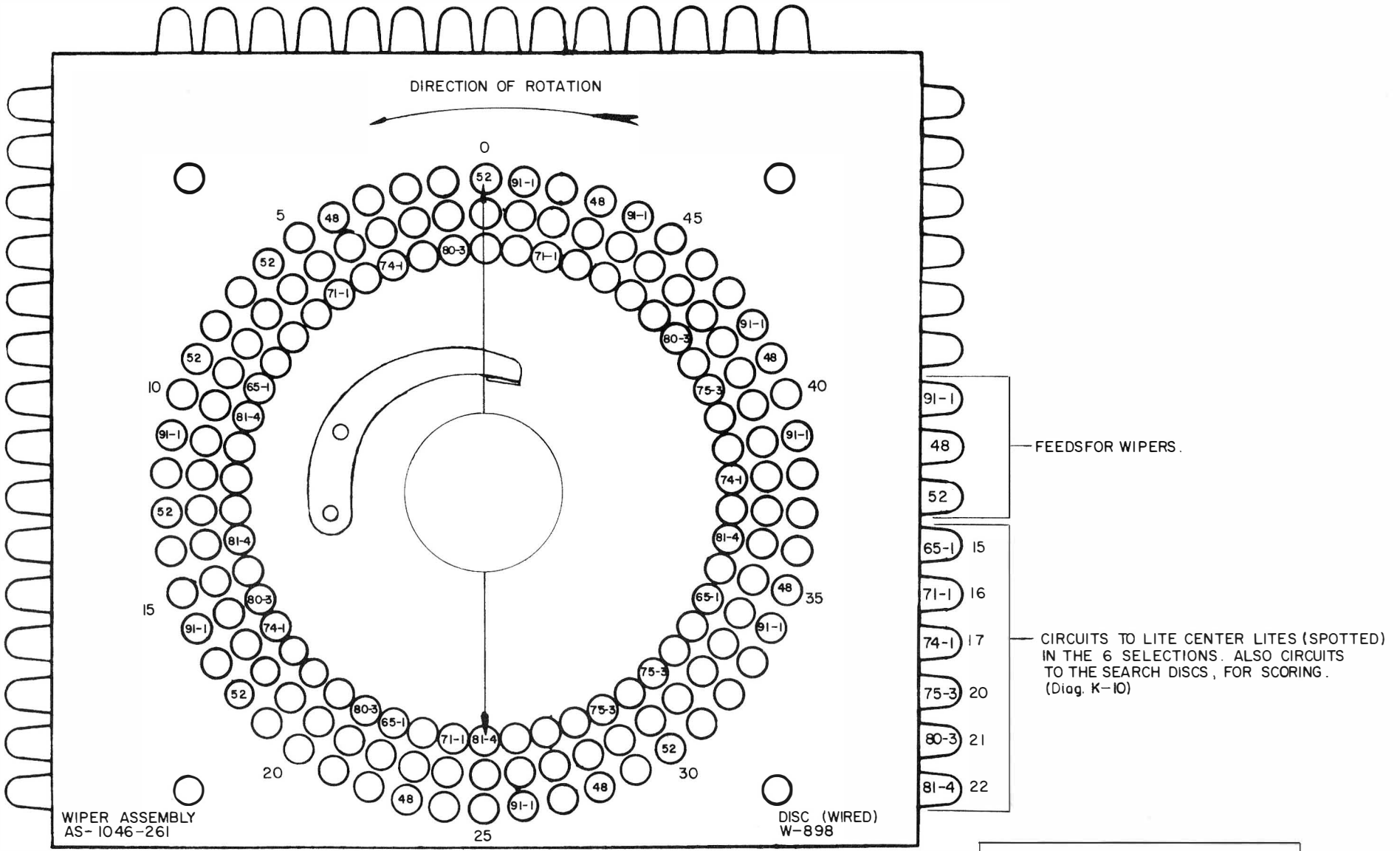
- COMPLETE UNIT.....AS-1022-62  
 RESET COIL.....28-R-15  
 STEP-UP COIL.....25-GG-7  
 STEP-UP PLUNGER.....S-496-100  
 STEP-UP ARM.....A-1765-4  
 RATCHET & SHAFT.....C-1050-6-39

# CARD SELECTOR MOTOR UNIT DISC viewed from BUTTON or WIPER side



# SPOTTING UNIT DISC viewed from BUTTON or WIPER side

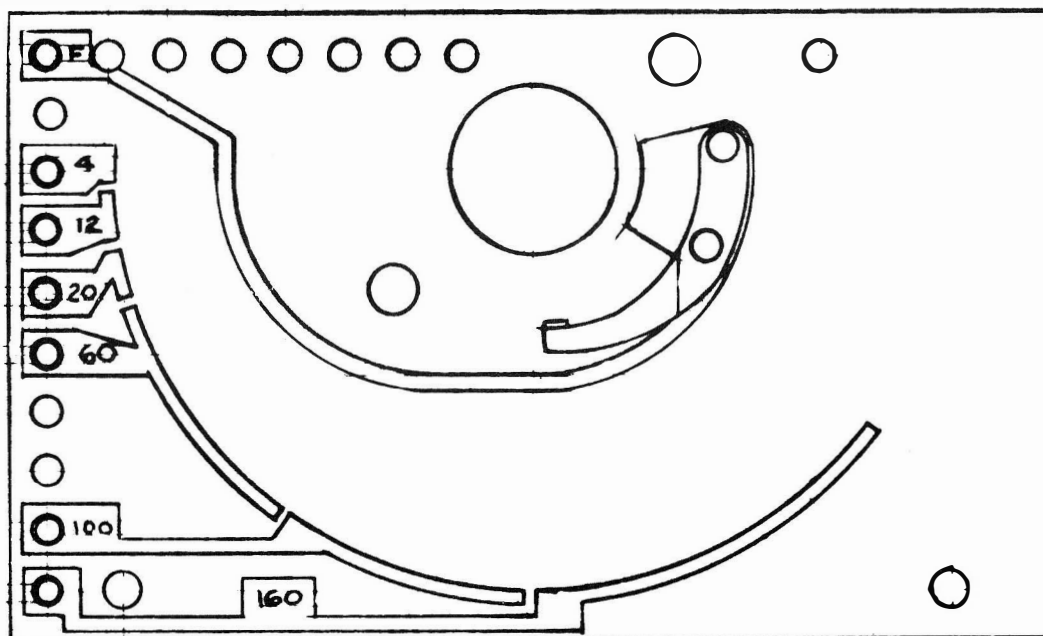
Continuous step unit.



- |                      |            |
|----------------------|------------|
| COMPLETE UNIT.....   | AS-1358-10 |
| STEP-UP COIL.....    | E-184-125  |
| STEP-UP PLUNGER..... | S-496-100  |
| STEP-UP ARM.....     | A-1765-4   |
| RATCHET & SHAFT..... | C-1050     |

# No. 1 and No. 2 SCORE COUNTER UNIT DISCS

viewed from WIPER side (SEE CODE BOX)



LUG	# 1	# 2
F	45-2	48-2
4	52-2	52-2
12	10-6	18-6
20	53-2	53-2
60	13-4	21-6
100	54-2	54-2
160	14-4	23-6

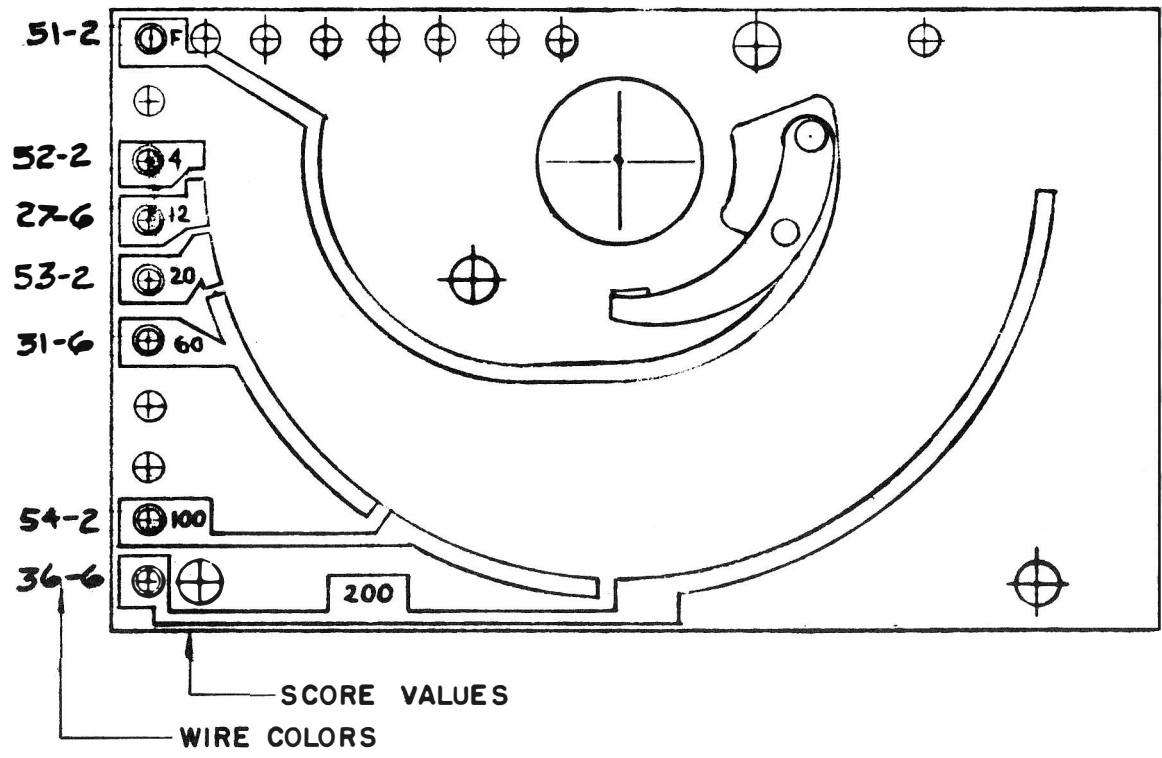
WIRE COLORS  
SCORE VALUES

COMPLETE UNIT ————— AS-797-53  
 RESET COIL ————— 28-R-15  
 STEP-UP COIL ————— 25-6G-7  
 STEP-UP PLUNGER ————— S-496-116  
 STEP-UP ARM ————— A-1765-4  
 RATCHET & SHAFT ————— C-100

PRINTED CIRCUIT  
 CONTACT PLATE  
 W-945-1

WIPER ASSEMBLY  
 AS-1046-263

**No. 3 SCORE COUNTER UNIT DISC** viewed from WIPER side

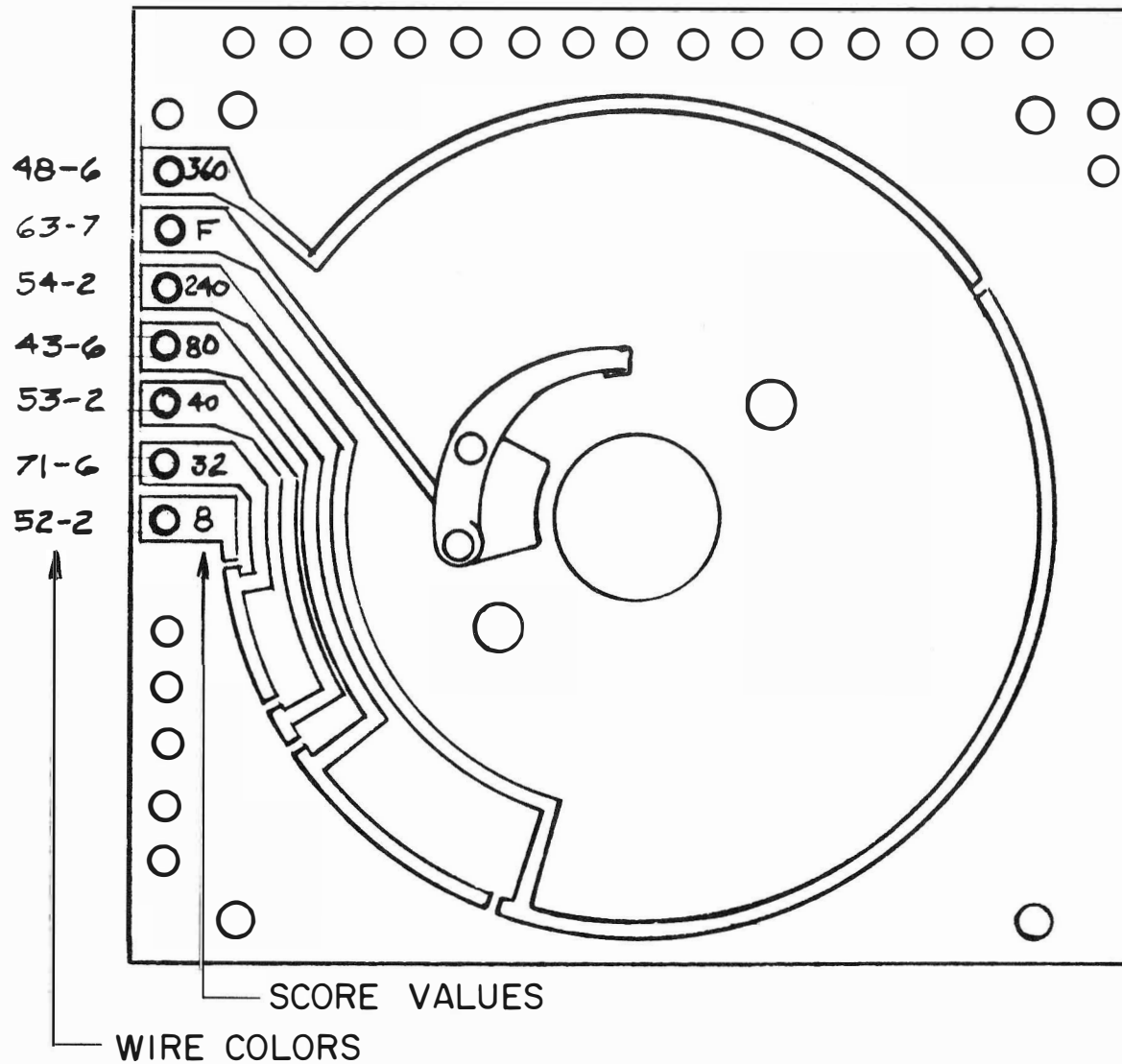


COMPLETE UNIT	AS - 797 - 55
RESET COIL	28 - R - 15
STEP-UP COIL	25 - GG - 7
STEP-UP PLUNGER	S - 496 - 116
STEP-UP ARM	A - 1765 - 4
RATCHET & SHAFT	C - 100

PRINTED CIRCUIT  
CONTACT PLATE  
W - 945 - 2

WIPER ASSEMBLY  
AS - 1046 - 263

# No. 4 SCORE COUNTER UNIT DISC viewed from WIPER side



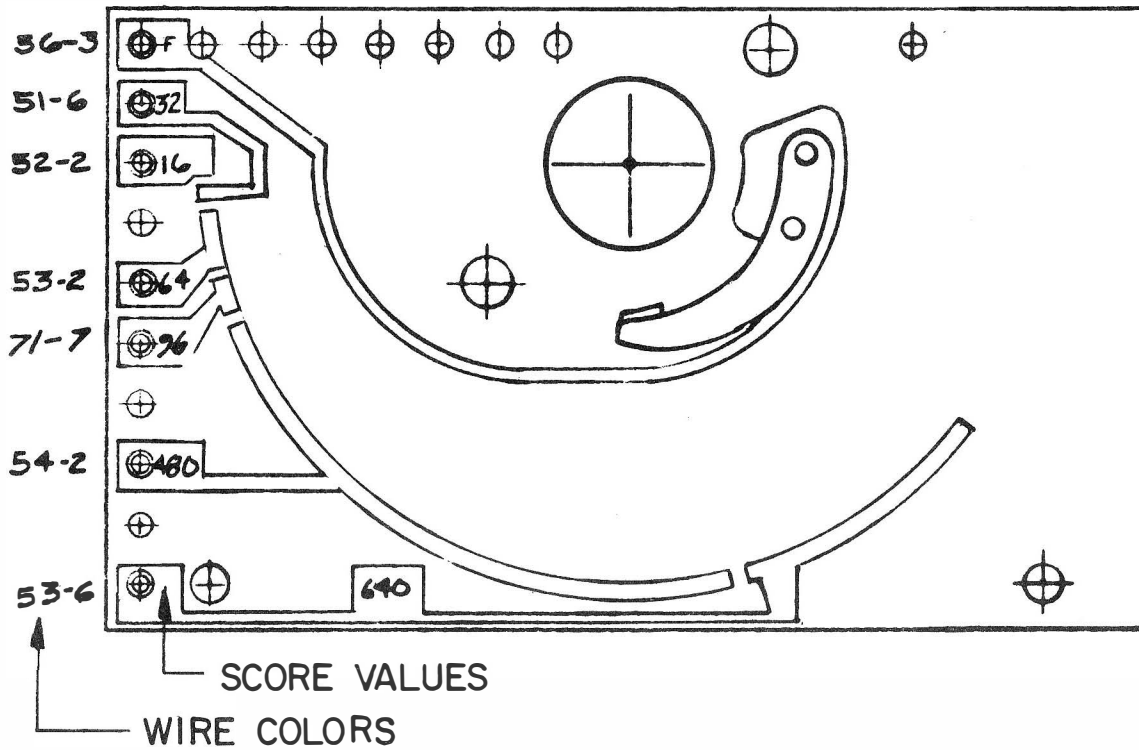
COMPLETE UNIT — AS-797-56  
 RESET COIL — 28-R-15  
 STEP-UP COIL — 25-GG-7  
 STEP-UP PLUNGER — S-496-116  
 STEP-UP ARM — A-1765-4  
 RATCHET & SHAFT — C-100

PRINTED CIRCUIT  
 CONTACT PLATE  
 W-945-3

WIPER ASSEMBLY  
 AS-1046-263



**No. 5 SCORE COUNTER UNIT DISC** viewed from WIPER side

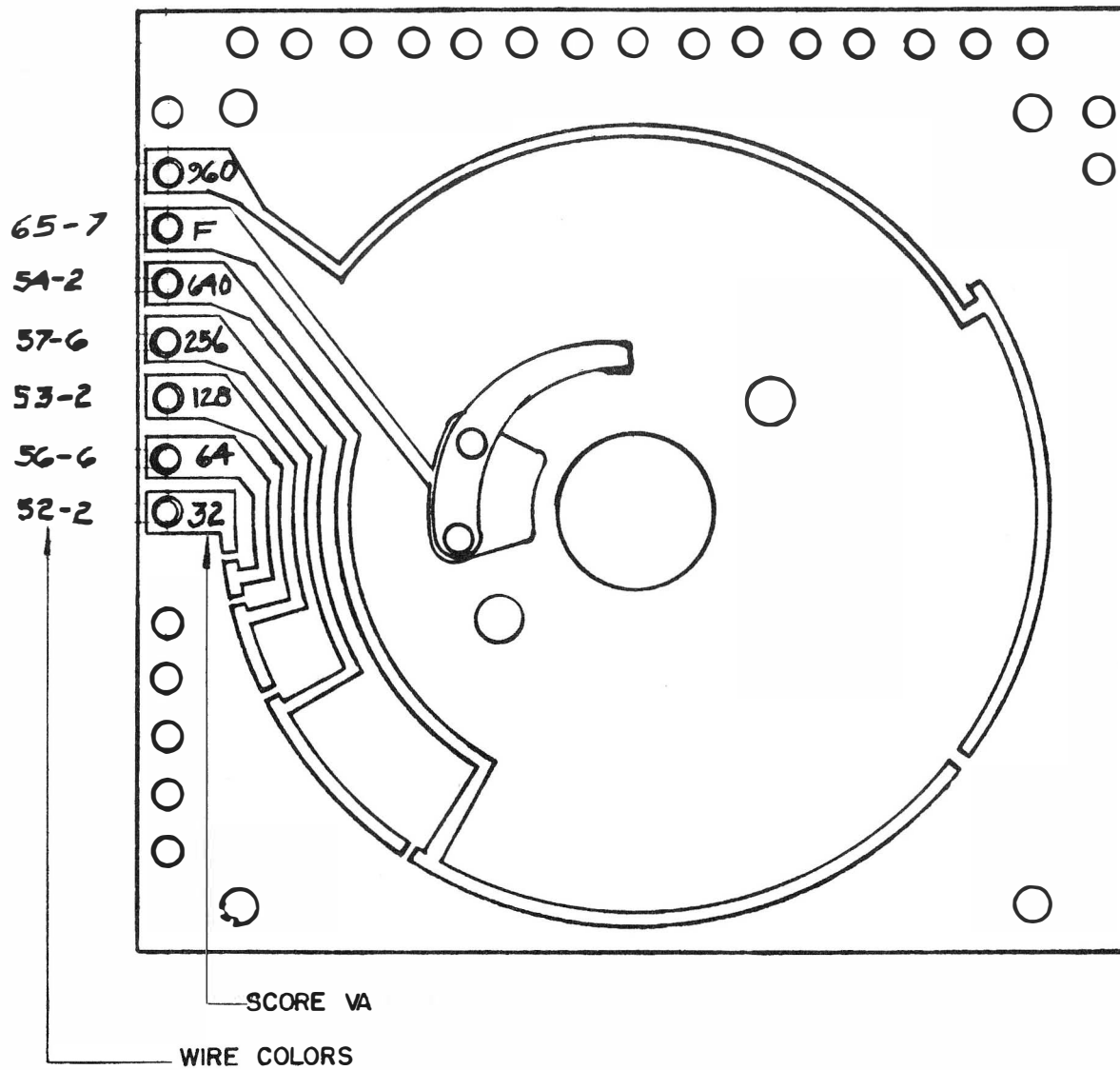


- COMPLETE UNIT — AS-797-57  
 RESET COIL — 28-R-15  
 STEP-UP COIL — 25-GG-7  
 STEP-UP PLUNGER — S-496-116  
 STEP-UP ARM — A-1765-4  
 RATCHET & SHAFT — C-100

PRINTED CIRCUIT  
 CONTACT PLATE  
 W-945-4

WIPER ASSEMBLY  
 AS-1046-263

# No. 6 SCORE COUNTER UNIT DISC viewed from WIPER side



COMPLETE UNIT	AS - 797-58
RESET COIL	28-R-15
STEP-UP COIL	25-GG-7
STEP-UP PLUNGER	S - 496-116
STEP-UP ARM	A - 1765-4
RATCHET & SHAFT	C - 100

PRINTED CIRCUIT CONTACT PLATE W-945-5
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WIPER ASSEMBLY AS-1046-263
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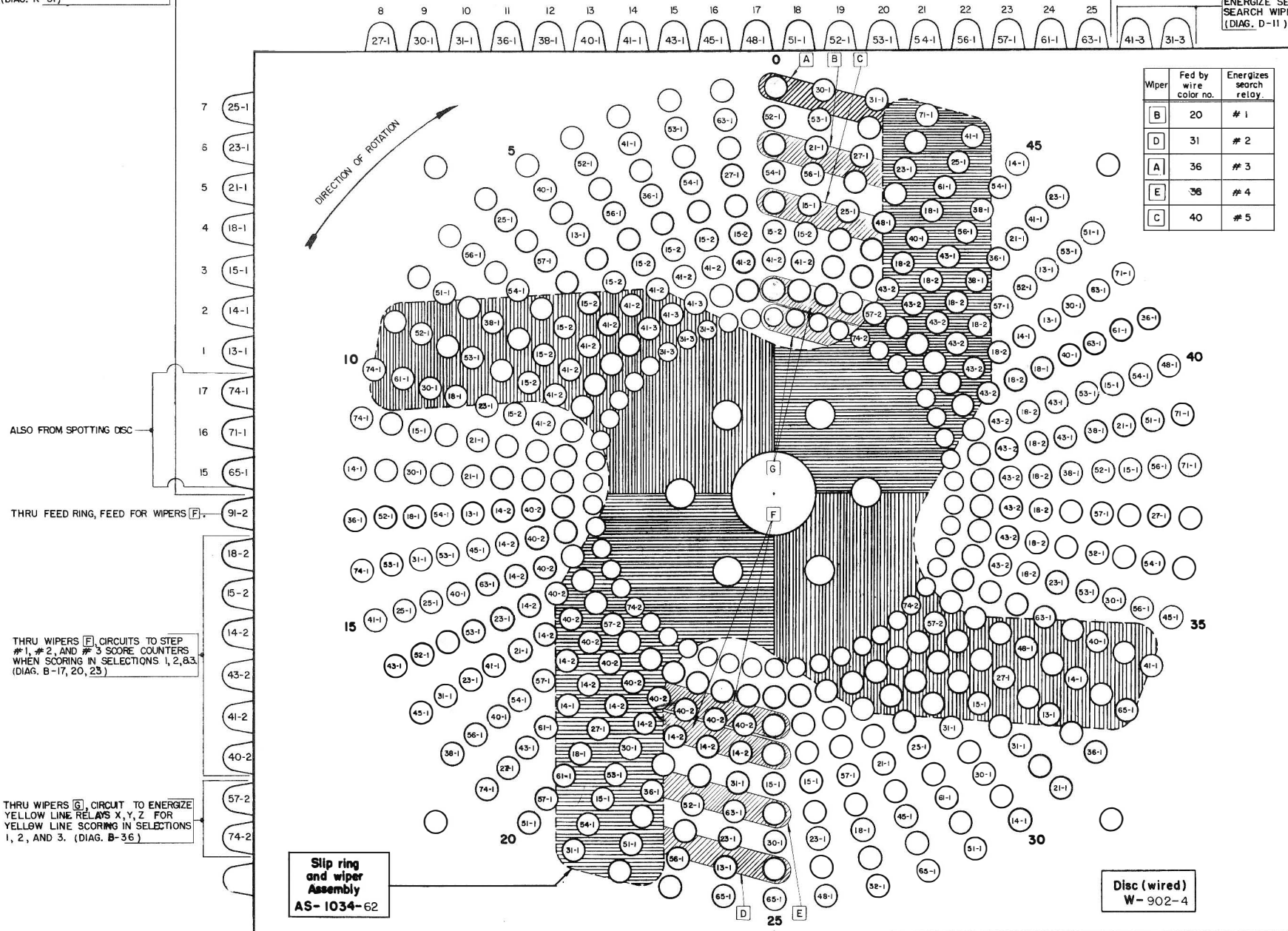
LWES

# NOTES

# SEARCH DISC for Selections 1, 2, 3 viewed from BUTTON or WIPER side

THRU WIPERS [A], [B], [C], [D], [E],  
CIRCUITS FROM PANEL SWITCHES  
TO ENERGIZE SEARCH RELAYS FOR  
SCORING IN SELECTIONS 1, 2, AND 3.  
(DIAG. K-31)

THRU WIPERS [G], CIRCUIT TO  
ENERGIZE SELECTION 4, 5, 6  
SEARCH WIPER LOCK COIL.  
(DIAG. D-11)



ALSO FROM SPOTTING DISC

THRU FEED RING, FEED FOR WIPERS [F]

THRU WIPERS [F], CIRCUITS TO STEP  
#1, #2, AND #3 SCORE COUNTERS  
WHEN SCORING IN SELECTIONS 1, 2, & 3.  
(DIAG. B-17, 20, 23)

THRU WIPERS [G], CIRCUIT TO ENERGIZE  
YELLOW LINE RELAYS X, Y, Z FOR  
YELLOW LINE SCORING IN SELECTIONS  
1, 2, AND 3. (DIAG. B-36)

Slip ring  
and wiper  
Assembly  
AS-1034-62

Disc (wired)  
W-902-4

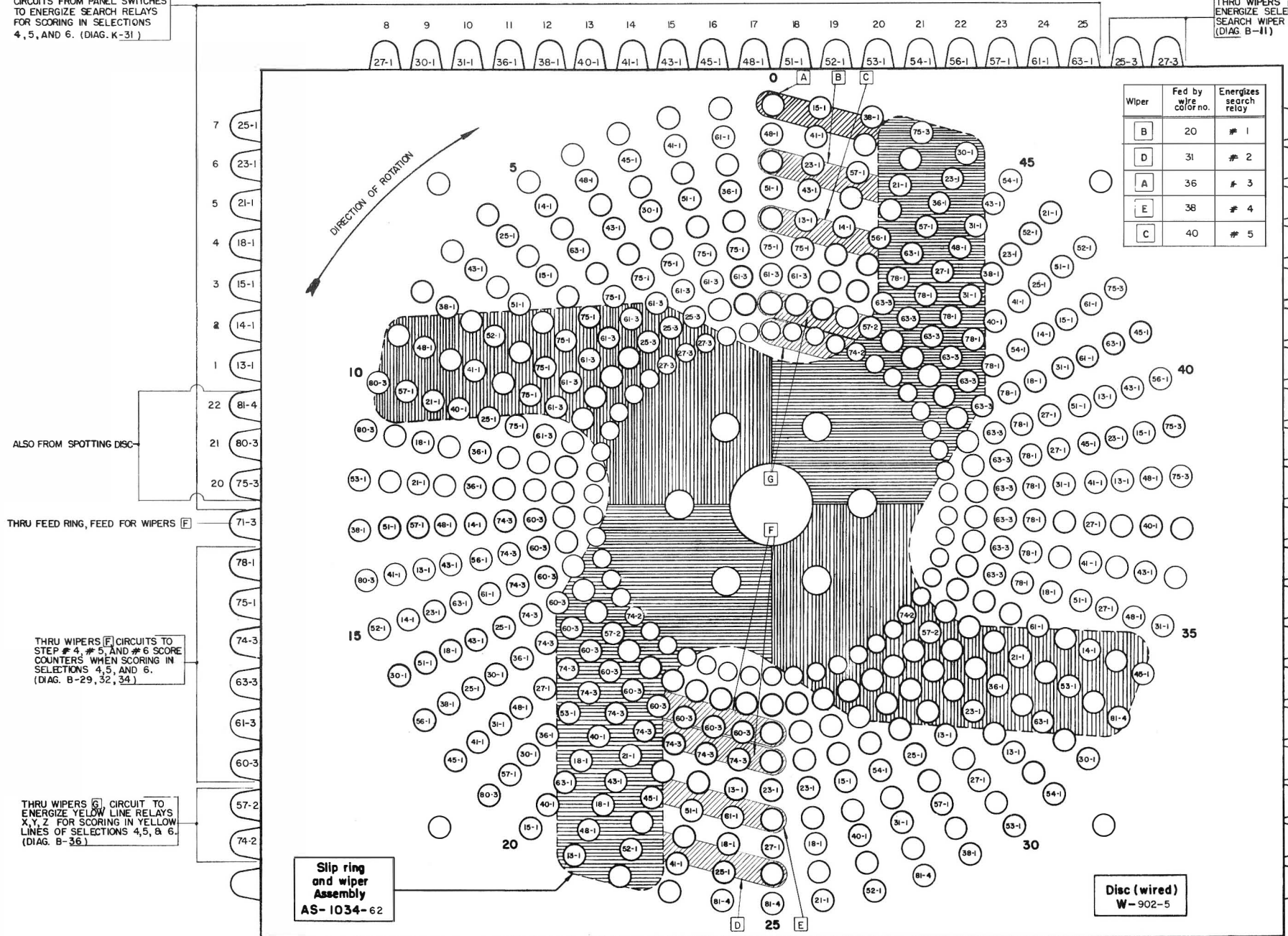
SELECTIONS 1-2-3.

SEARCH POSITIONS CHART						
WIPER [A] AT POSITION	WIPER [B] SEARCH RELAY # 1	WIPER [D] SEARCH RELAY # 2	WIPER [A] SEARCH RELAY # 3	WIPER [E] SEARCH RELAY # 4	WIPER [C] SEARCH RELAY # 5	
1						
2						
3						
4						
5						
6						
7						
8						
9						
DIAGONAL	10	9	22	17	20	6
	11	3	21	17	19	5
	12	9	8	2	23	5
	13	4	22	11	19	1
VERTICAL	14	10	18	17	12	16
	15	7	21	14	20	25
	16	3	24	15	13	6
	17	6	25	16	1	5
YELLOW LINE	18	13	20	12	19	23
HORIZONTAL	19	15	14	17	11	2
	20	24	21	18	22	8
	21	3	7	10	4	9
22						
23						
DIAGONAL	24	6	20	15	22	10
	25	9	19	15	21	3
	26	6	25	17	8	3
	27	4	20	12	21	23
VERTICAL	28	16	14	15	11	5
	29	24	19	18	22	7
	30	9	13	2	1	10
	31	10	7	5	23	3
YELLOW LINE	32	1	22	11	21	8
HORIZONTAL	33	2	18	15	12	17
	34	13	19	14	20	25
	35	9	24	16	4	6
36						
37						
DIAGONAL	38	3	19	16	21	12
	39	5	22	16	20	15
	40	3	7	17	13	15
	41	25	19	11	20	4
VERTICAL	42	9	10	16	14	2
	43	1	22	18	21	23
	44	5	8	6	24	12
	45	12	23	2	4	15
YELLOW LINE	46	24	21	14	20	13
HORIZONTAL	47	6	18	16	11	17
	48	8	22	10	19	7
	49	5	1	9	25	3
50						

# SEARCH DISC for Selections 4, 5, 6 viewed from BUTTON or WIPER side

THRU WIPERS A, B, C, D, E  
CIRCUITS FROM PANEL SWITCHES  
TO ENERGIZE SEARCH RELAYS  
FOR SCORING IN SELECTIONS  
4, 5, AND 6. (DIAG. K-31)

THRU WIPERS G, CIRCUIT TO  
ENERGIZE SELECTION 1, 2, 3  
SEARCH WIPER LOCK COIL.  
(DIAG. B-11)



Wiper	Fed by wire color no.	Energizes search relay
B	20	# 1
D	31	# 2
A	36	# 3
E	38	# 4
C	40	# 5

Slip ring  
and wiper  
Assembly  
AS-1034-62

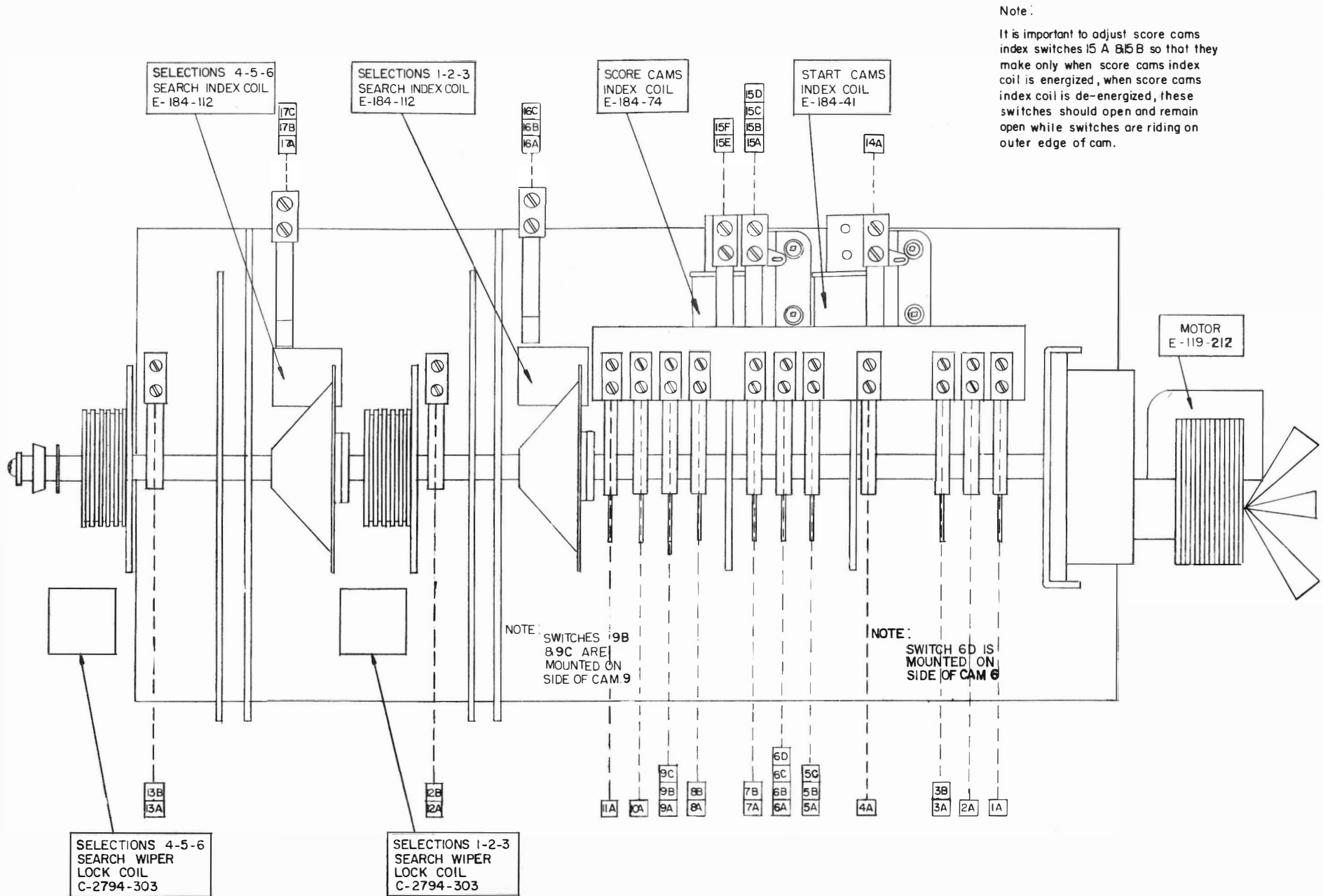
Disc (wired)  
W-902-5

SELECTIONS 4-5-6.

SEARCH POSITIONS CHART						
WIPER [A] AT POSITION	WIPER [B] SEARCH RELAY # 1	WIPER [D] SEARCH RELAY # 2	WIPER [A] SEARCH RELAY # 3	WIPER [E] SEARCH RELAY # 4	WIPER [C] SEARCH RELAY # 5	
1						
2						
3						
4						
5						
6						
7						
8						
9						
DIAGONAL	10	5	17	21	18	7
	11	4	15	21	14	11
	12	5	13	20	8	11
	13	23	17	12	14	2
VERTICAL	14	1	3	21	16	22
	15	6	15	19	18	24
	16	4	25	9	10	7
YELLOW LINE	17	7	24	22	2	11
HORIZONTAL	18	10	18	16	14	8
	19	9	19	21	12	20
	20	25	15	3	17	13
	21	4	6	1	23	5
22						
23						
DIAGONAL	24	4	14	22	15	1
	25	8	17	22	18	6
	26	4	24	5	11	6
	27	13	14	19	18	3
VERTICAL	28	10	16	22	9	21
	29	23	17	12	15	7
	30	8	2	20	25	1
YELLOW LINE	31	1	7	21	3	6
HORIZONTAL	32	25	15	9	18	11
	33	20	12	22	19	5
	34	2	17	16	14	24
	35	8	23	10	13	4
36						
37						
DIAGONAL	38	1	18	20	17	10
	39	6	14	20	15	8
	40	1	2	22	25	8
	41	24	18	16	15	4
VERTICAL	42	3	12	20	9	21
	43	7	14	19	17	13
	44	6	23	5	11	10
YELLOW LINE	45	10	13	21	4	8
HORIZONTAL	46	11	17	9	15	25
	47	5	19	20	16	22
	48	23	14	12	18	2
	49	6	7	3	24	1
	50					

# CONTROL UNIT PICTORIAL VIEW

NUMBERS CORRESPOND TO SWITCH CHART ON PAGE 17



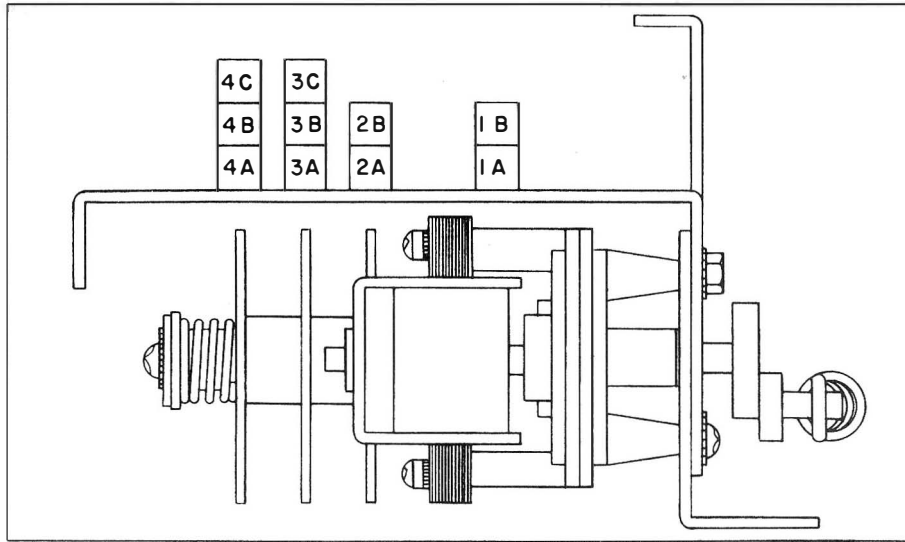


# CONTROL UNIT CAM SWITCH CHART FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW ON PAGE 16

CAM SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
IA N.O.	C-14	10-2 13-2	Red Red-Yellow	In series with control unit cam switch 5C, pulses spotting unit step-up coil.
PINSWITCH 2A N.C.	E-8	63-2 93-2	Brown-Yellow Gray-Yellow	Pulses timer unit step-up coil when circuit complete thru other factors.
16 PULSE 3A N.O.	C-7	75 83	Orange-White Black-Yellow	Pulses score register escapement coil when score reset relay is energized.
16 PULSE 3B N.O.	J-6	25-6 30	Blue-White Yellow	Flashes selection lites when circuit complete thru other factors.
4A N.O.	C-39	48-3 52-4	Green-Black White-Blue	Energizes selection relay when circuit complete thru other factors.
5A N.C.	I-6	93-1 30	Gray-Yellow Yellow	In series with start circuit.
5B S.P.D.T.	B-25	18-7 20-7 15-7	Red-Black Blue Red-White	Directs circuit from replay meter to total play meter.
5C N.O.	E-14	10-2 36-4	Red Yellow-Brown	In series with circuit to pulse spotting unit step-up coil.
6A N.O.	C-4	51 30	White-Red Yellow	Energizes anti-cheat relay.
6B N.O.	F-14	36-4 50-1	Yellow-Brown White	Pulses selection unit step-up coil when circuit complete thru other factors.
6C N.C.	H-37	38-3 30	Yellow-Black Yellow	In series with selection flash-relay lock-in circuit.
VERTICAL SWITCH 6D S.P.D.T.	D-6	81 14-5 13-5	Black-Red Red-Green Red-Yellow	Opens start relay circuit thru coin switch, and completes circuit to energize tilt relay if coin switch is closed too long. (Anti-cheat coin switch circuit)
7A N.O.	F-5	91 30	Gray-Red Yellow	Pulses reflex play magnet coil, score register escapement coil, and total plays meter.
7B N.C.	G-37	45-3 30	Green-White Yellow	In series with selection relay lock-in circuit.
8A N.O.	A-23	75-4 90	Orange-White Gray	Pulses #1, #2, and #3 score counter unit step-up coils when scoring in selection 1, 2, and 3.
8B N.O.	A-27	15-4 80	Red-White Black	Pulses #4 score counter unit step-up coil when scoring in selection 4.
9A N.O.	D-26	21-2 23-2	Blue-Red Blue-Yellow	Pulses replay meter, reflex score magnet coil, and score register unit step-up coil when scoring.
VERTICAL SWITCH 9B N.O.	E-23	27-2 91-2	Blue-Orange Gray-Red	In series with scoring lock-in circuit when scoring in selections 1, 2, and 3.
VERTICAL SWITCH 9C N.O.	E-26	27-2 71-3	Blue-Orange Orange-Red	In series with scoring lock-in circuit when scoring in selection 4, 5 and 6.
10A N.O.	A-31	78-2 80	Orange-Black Black	Pulses #5, and #6 score counter unit step-up coils when scoring in selection 5, and 6.
11A N.C.	H-16	50 90-1	White Gray	In series with circuit to energize 1-2-3 or 4-5-6 search index coil for scoring.

CAM SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
SELECTIONS 1-2-3 SEARCH WIPER LOCK COIL	A-11	27-3 70	Blue-Orange Orange	Energized when 4th ball is raised to playfield, and releases selections 1-2-3 search wipers to search for scores.
SEARCH CAM 12A N.O.	F-2	10P 20P	Red(Plastic) Blue(Plastic)	Completes a circuit to control unit motor.
SEARCH CAM 12B S.P.D.T.	D-11	23-3 38-7 31-3	Blue-Yellow Yellow-Black Yellow-Red	Directs circuit to energize selection 1-2-3, search wiper lock coil, or selection 4-5-6 search wiper lock coil.
SELECTIONS 4-5-6 SEARCH WIPER LOCK COIL	A-11	41-3 70	Green-Red Orange	Energized when search for scores in selections 1-2-3 is completed, and releases selections 4-5-6 search wipers to search for scores.
SEARCH CAM 13A N.O.	F-2	10P 20P	Red(Plastic) Blue(Plastic)	Completes a circuit to control unit motor.
SEARCH CAM 13B S.P.D.T.	C-11	27-3 23-3 25-3	Blue-Orange Blue-Yellow Blue-White	Directs circuit to energize selections 1-2-3 search wiper lock coil at start of search cycle, or after selection 4-5-6 search cycle is completed.
START CAMS INDEX COIL	A-9	56 70	White-Brown Orange	Energized thru shutter motor cam switch 4C when start relay is energized.
14A N.O.	E-2	10P 20P	Red(Plastic) Blue(Plastic)	Completes a circuit to control unit motor.
SCORE CAMS INDEX COIL	A-24	21-2 70	Blue-Red Orange	Energized by 1-2-3 search index switch 16C, or 4-5-6 search index switch 17C, and releases score cams.
15A N.O.	H-25	27-2 50	Blue-Orange White	In series with scoring lock-in circuit when scoring in any selection.
15B N.O.	H-16	90-1 50	Gray White	Same function as switch 15A.
15C N.C.	B-24	51-3 91-2	White-Red Gray-Red	Opens direct 50 volt circuit to selections 1-2-3 search index coil, coil then held in thru resistor.
15D N.C.	B-26	52-3 71-3	White-Blue Orange-Red	Opens direct 50 volt circuit to selections 4-5-6 search index coil, coil then held in thru resistor.
15E N.O.	E-2	10P 20P	Red(Plastic) Blue(Plastic)	Completes a circuit to control unit motor.
15F N.C.	D-8	61-2 63-2	Brown-Red Brown-Yellow	Opens timer unit step-up circuit.
SELECTIONS 1-2-3 SEARCH INDEX COIL	A-23	51-3 90	White-Blue Gray	Energized thru selections 1-2-3 search d made in selection 1, 2, or 3.
16A N.C.	H-6	15-5 93-1	Red-White Gray-Yellow	Opens start circuit.
16B N.C.	A-26	80 70	Black Orange	Opens circuit to selections 4-5-6 search index coil.
16C N.O.	E-24	21-2 91-2	Blue-Red Gray-Red	Completes a circuit to energize score cams index coil.
SELECTIONS 4-5-6 SEARCH INDEX COIL	A-26	52 80	White-Blue Black	Energized thru selections 4-5-6 search disc when a score is made in selection 4, 5, or 6.
17A N.C.	G-6	15-5 57	Red-White White-Orange	Opens start circuit.
17B N.C.	A-24	90 70	Gray Orange	Opens circuit to selection 1-2-3 search index coil.
17C N.O.	E-25	21-2 71-3	Blue-Red Orange-Red	Completes a circuit to energize score cams index coil.

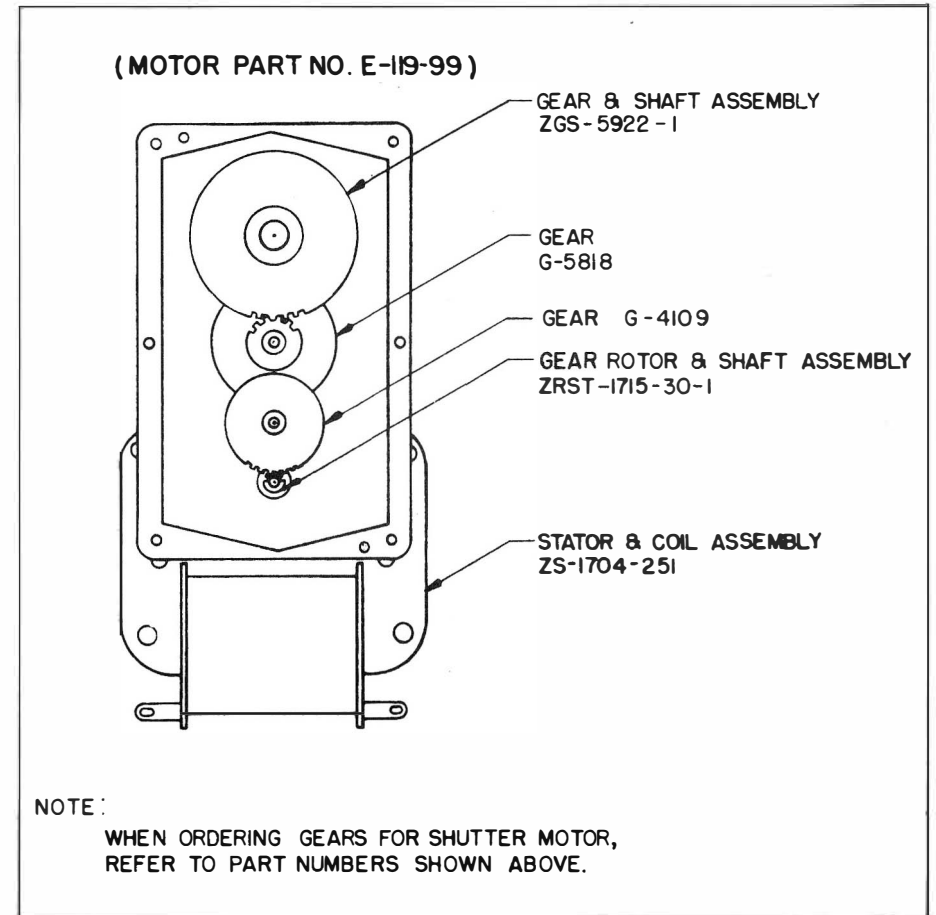
# SHUTTER MOTOR PICTORIAL VIEW



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

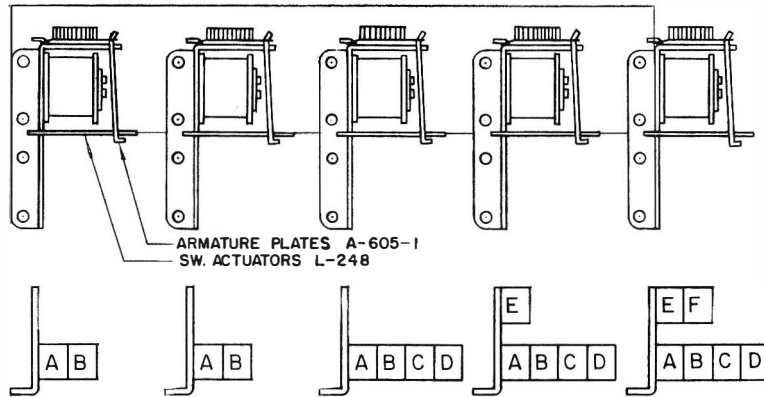
CAM SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES	
1A	N.C.	I-15	90-1 30	Gray Yellow	(Closed when shutter is closed) in series with scoring circuit.
1B	N.O.	C-9	80-2 30	Black Yellow	Completes shutter motor carry-over circuit.
2A	N.O.	F-10	98 30	Gray-Black Yellow	Energizes ball gate relay when starting new game.
2B	N.O.	H-12	85 30	Black-White Yellow	Resets score counter units, selection unit, timer unit, and energizes tilt reset coil when starting new game.
3A	N.O.	F-9	38-2 61	Yellow-Black Brown-Red	(Closed when shutter is open) in series with circuit to close shutter if game is tilted when shutter is open.
3B	N.C.	J-8	91-1 30	Gray-Red Yellow	(Closed when shutter is closed) in series with circuit to lite spotted number lites.
3C	N.O.	D-9	61 80-2	Brown-Red Black	(Closed when shutter is open) in series with circuit to close shutter when game is tilted when shutter is open. Also in series with circuit to close shutter when 1st ball is shot.
4A	N.O.	H-4	78 30	Orange-Black Yellow	(Closed when shutter is open) runs card selector unit motor.
4B	N.C.	G-8	60-1 93-2	Brown Gray-Yellow	(Closed when shutter is closed) in series with timer unit step-up circuit. Also in series with search circuit.
4C	S.P.D.T.	B-9	80-2 54 56	Black White-Green White-Brown	Directs circuit to open shutter, and energize start cams index coil when start relay is energized.

# SHUTTER MOTOR



# 5 RELAYS BANK PICTORIAL VIEW

NUMBERS CORRESPOND TO SWITCH CHART AT RIGHT



Name	SELECTION FLASH RE.	SELECTION RE.	START RE.	ANTI-CHEAT RE.	SCORE RESET RE.
Coil turns & wire gauge	2300 # 33	2300 # 33	1800 # 33	2300 # 33	2300 # 33
Coil resistance (nominal)	85 Ω	85 Ω	65 Ω	85 Ω	85 Ω
Operating voltage	50 V.	50 V.	50 V.	50 V.	50 V.
Test voltage	37 V.	37 V.	32 V.	39 V.	37 V.
Extension spring load	CLEAR	CLEAR	GREEN	YELLOW	YELLOW
Sw actuator stroke	3/32	3/32	3/32	3/32	3/32
Additional information				THERMALEZE WIRE OR EQUIVALANT. NO WRAP ON COIL.	
COIL NO.	C-7300-331	C-7300-331	C-7300-334	C-7300-336	C-7300-331

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

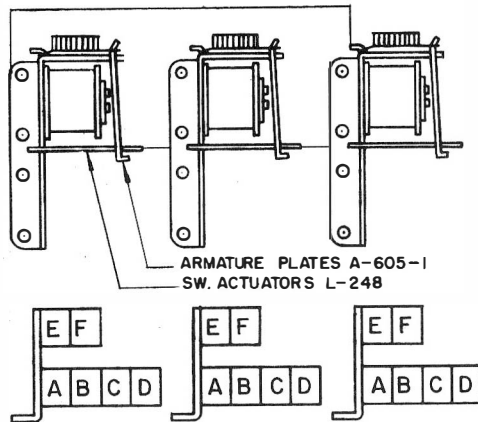
# 5 RELAYS BANK SWITCH CHART

FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
SELECTION FLASH RELAY COIL	B-37	36-3 70	Yellow-Brown Orange	Energized by start relay switch.
A N.O.	E-37	36-3 38-3	Yellow-Brown Yellow-Black	Lock-in circuit for this relay.
B N.O.	K-6	21 25-6	Blue-Red Blue-White	Completes circuit to flash selection lites.
SELECTION RELAY COIL	B-39	48-3 70	Green-Black Orange	Energized for 1st 3 selections directly thru selection disc. Energized for 4-5-6 selections by control unit cam switch 4A, when circuit complete thru other factors.
A N.O.	D-37	45-3 48-3	Green-White Green-Black	Lock-in circuit for this relay.
B N.O.	E-14	50-1 53-3	White White-Yellow	Completes circuit to step selection unit.
START RELAY COIL	A-6	90-7 70	Gray Orange	Energized by coin switch or red button switch when circuit complete thru other factors.
A N.O.	E-6	57 81	White-Orange Black-Red	Lock-in circuit for this relay.
B N.O.	C-9	54 30	White-Green Yellow	Completes circuit to open shutter, and energize start cams index coil.
C N.O.	G-36	36-3 30	Yellow-Brown Yellow	Energizes selection flash relay.
D N.O.				Not used.
ANTI-CHEAT RELAY COIL	A-5	51 70	White-Red Orange	Energized by control unit cam switch 6A.
A N.O.	C-5	51 30	White-Red Yellow	Lock-in circuit for this relay.
B N.O.	L-6	14 15	Red-Green Red-White	Opens 17 volt circuit when relay drops out.
C N.C.	E-8	75 98-1	Orange-White Gray-Black	Completes circuit to energize score reset relay when this relay drops out.
D N.C.	L-4	18 31-4	Red-Black Yellow-Red	Completes circuit to lite tilt lite when this relay drops out.
E N.O.				Not used.
SCORE RESET RELAY COIL	A-8	75 70	Orange-White Orange	Energized thru score indicator "O" switch when anti-cheat relay drops out.
A N.O.	E-7	75 98-1	Orange-White Gray-Black	Lock-in circuit for this relay.
B N.O.	C-2	10P 20P	Red(Plastic) Blue(Plastic)	Completes a circuit to control unit motor.
C N.C.	D-8	53 61-2	White-Yellow Brown-Red	Opens timer unit step-up circuit.
D N.C.	B-6	81 90-7	Black-Red Gray	Opens start circuit.
E S.P.D.T.	C-7	91 93 83	Gray-Red Gray-Yellow Black-Yellow	Directs circuit to pulse score register escapement coil thru control unit cam switch 7A, or thru control unit 16 pulse cam switch 3A.
F N.O.				Not used.

### 3 RELAYS BANK PICTORIAL VIEW

NUMBERS CORRESPOND TO SWITCH CHART AT RIGHT



NAME	Z YELLOW LINE RE	Y YELLOW LINE RE	X YELLOW LINE RE
Coil turns & wire gauge	1700 # 33	1700 # 33	1700 # 33
Coil resistance (nominal)	60 Ω	60 Ω	60 Ω
Operating voltage	50 V.	50 V.	50 V.
Test voltage	37 V.	37 V.	37 V.
Extension spring load	GREEN	GREEN	GREEN
Sw actuator stroke	3/32	3/32	3/32
Additional information			
COIL NO.	C-7300-338	C-7300-338	C-7300-338

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

### 3 RELAYS BANK SWITCH CHART

FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	UNCTION OF SWITCHES
(Z) YELLOW LINE RELAY COIL	A-36	57-2 70	White-Orange Orange	Energized thru search discs for yellow line scoring. Switches on this relay direct #5 and #6 score counter step-up circuits for white and yellow line scoring.
A S.P.D.T.	E-30	53-2 51-6 52-2	White-Yellow White-Red White-Blue	Directs #5 score counter step-up circuit for white 4-in-line or yellow 3-in-line scoring in selection 5.
B S.P.D.T.	F-31	54-2 71-7 53-2	White-Green Orange-Red White-Yellow	Directs #5 score counter step-up circuit for white 5-in-line or yellow 4-in-line scoring in selection 5.
C S.P.D.T.	E-33	53-2 56-2 52-2	White-Yellow White-Brown White-Blue	Directs #6 score counter step-up circuit for white 4-in-line or yellow 3-in-line scoring in selection 6.
D S.P.D.T.	F-33	54-2 57-6 53-2	White-Green White-Orange White-Yellow	Directs #6 score counter step-up circuit for white 5-in-line or yellow 4-in-line scoring in selection 6.
E N.O.	E-31	53-6 54-2	White-Yellow White-Green	Completes #5 score counter step-up circuit for yellow 5-in-line scoring in selection 5.
F N.O.				Not used.
(Y) YELLOW LINE RELAY COIL	A-36	57-2 70	White-Orange Orange	Energized thru search discs for yellow line scoring. Switches on this relay direct #3 and #4 score counter step-up circuits for white and yellow line scoring.
A S.P.D.T.	E-21	53-2 27-6 52-2	White-Yellow Blue-Orange White-Blue	Directs #3 score counter step-up circuit for white 4-in-line or yellow 3-in-line scoring in selection 3.
B S.P.D.T.	F-22	54-2 31-6 53-2	White-Green Yellow-Red White-Yellow	Directs #3 score counter step-up circuit for white 5-in-line or yellow 4-in-line scoring in selection 3.
C S.P.D.T.	E-27	53-2 71-6 52-2	White-Yellow Orange-Red White-Blue	Directs #4 score counter step-up circuit for white 4-in-line or yellow 3-in-line scoring in selection 4.
D S.P.D.T.	F-28	54-2 43-6 53-2	White-Green Green-Yellow White-Yellow	Directs #4 score counter step-up circuit for white 5-in-line or yellow 4-in-line scoring in selection 4.
E N.O.	E-29	48-6 54-2	Green-Black White-Green	Completes #4 score counter step-up circuit for yellow 5-in-line scoring in selection 4.
F N.O.	E-23	36-6 54-2	Yellow-Brown White-Green	Completes #3 score counter step-up circuit for yellow 5-in-line scoring in selection 3.
(X) YELLOW LINE RELAY COIL	A-36	57-2 70	White-Orange Orange	Energized thru search discs for yellow line scoring. Switches on this relay direct #1 and #2 score counter step-up circuits for white and yellow line scoring.
A S.P.D.T.	E-15	53-2 10-6 52-2	White-Yellow Red White-Blue	Directs #1 score counter step-up circuit for white 4-in-line or yellow 3-in-line scoring in selection 1.
B S.P.D.T.	F-16	54-2 13-4 53-2	White-Green Red-Yellow White-Yellow	Directs #1 score counter step-up circuit for white 5-in-line or yellow 4-in-line scoring in selection 1.
C S.P.D.T.	E-18	53-2 18-6 52-2	White-Yellow Red-Black White-Blue	Directs #2 score counter step-up circuit for white 4-in-line or yellow 3-in-line scoring in selection 2.
D S.P.D.T.	F-19	54-2 21-6 53-2	White-Green Blue-Red White-Yellow	Directs #2 score counter step-up circuit for white 5-in-line or yellow 4-in-line scoring in selection 2.
E N.O.	E-17	14-4 54-2	Red-Green White-Green	Completes #1 score counter step-up circuit for yellow 5-in-line scoring in selection 1.
F N.O.	E-20	23-6 54-2	Blue-Yellow White-Green	Completes #2 score counter step-up circuit for yellow 5-in-line scoring in selection 2.

## NEW ANTI-CHEAT COIN SWITCH CIRCUIT

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

The circuit is completed thru control unit cam switch

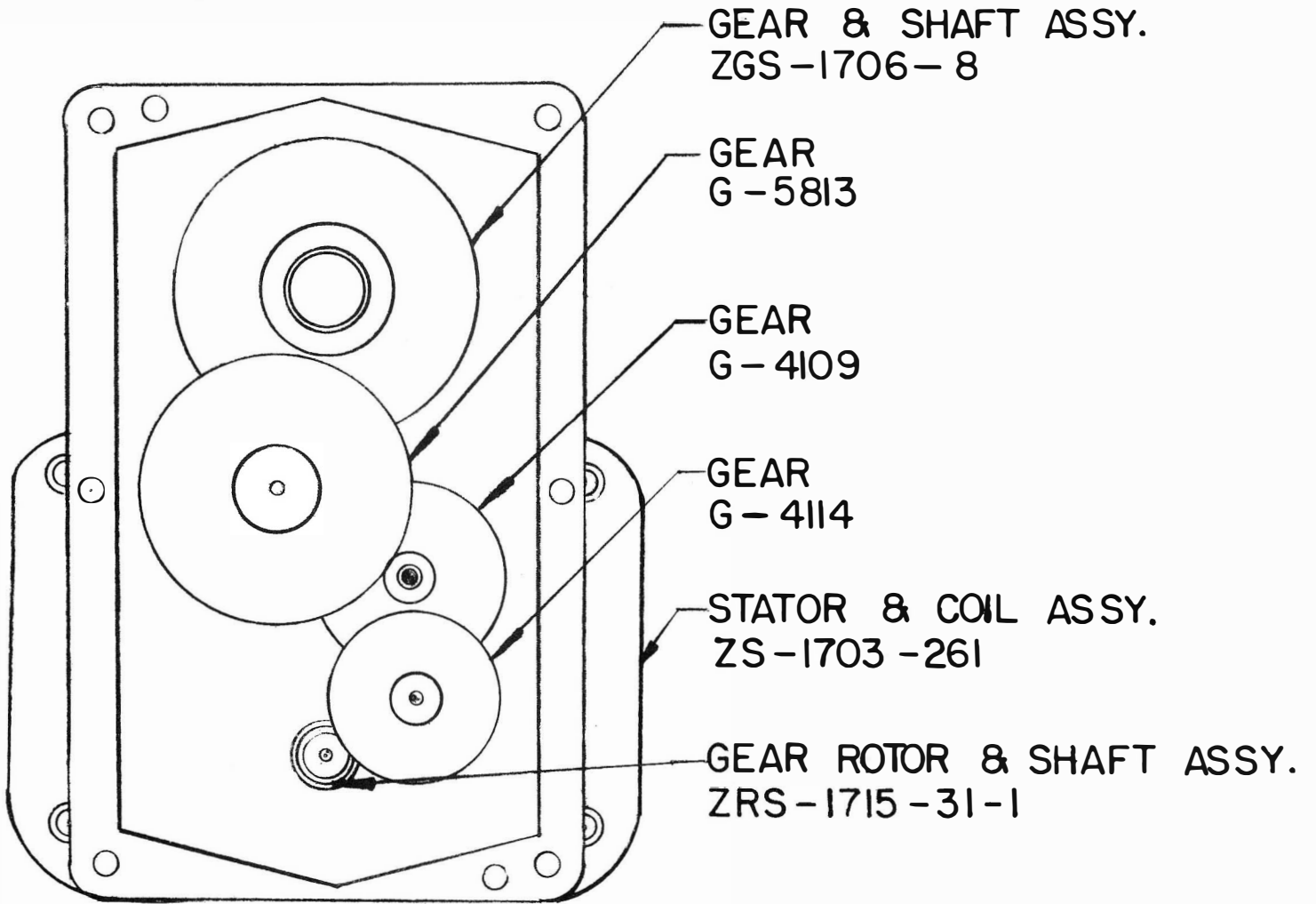
#6D (on wiring diagram at D-6).

## MISCELLANEOUS RELAYS SWITCH CHART

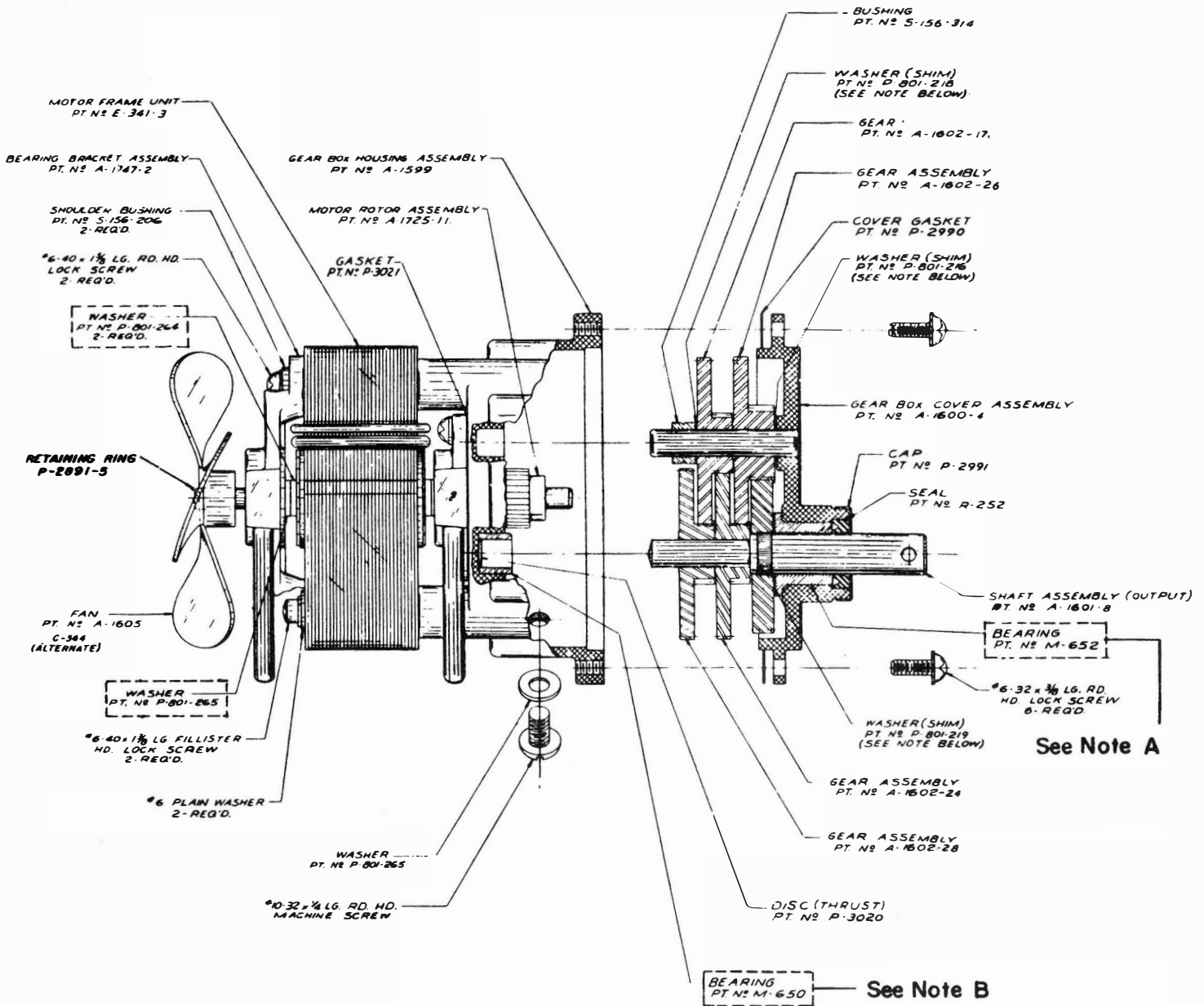
RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCHES
TILT RESET COIL	B-13	85 70	Black-White Orange	Energized by shutter motor cam switch 2B when starting new game.
TILT RELAY COIL	A-5	13-5 70	Red-Yellow Orange	Energized by tilt switches or plumb bob tilt. Also thru coin switch anti-cheat circuit.
A N.C.	D-1	10-P 50-P	Red(Plastic) White(Plastic)	Opens circuit to control unit motor.
B N.C.	B-5	13-5 13-5	Red-Yellow Red-Yellow	Opens circuit to this coil.
C N.C.	M-6	10 15	Red Red-White	Opens 17 volt circuit.
D N.O.	L-4	18 31-4	Red-Black Yellow-Red	Completes a circuit to lite tilt lite.
E S.P.D.T.	H-8	60-1 30 38-2	Brown Yellow Yellow-Black	Opens timer step-up circuit, and search circuit, and completes circuit to close shutter if game is tilted when shutter is open.
BALL GATE RELAY COIL	A-10	98 70	Gray-Black Orange	Energized by shutter motor cam switch 2A when starting new game. Relay stays energized until 1st ball is shot.
A N.O.	E-10	71 98	Orange-Red Gray-Black	Lock-in circuit for this relay.
B N.C.	H-9	61 30	Brown-Red Yellow	In series with circuit to close shutter when 1st ball is shot.

# CARD SELECTOR UNIT MOTOR

E-119-261



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



**NOTE**

IN ORDER TO MAINTAIN PROPER CLEARANCES BETWEEN GEARS IT IS MOST IMPORTANT THAT WHEN REASSEMBLING GEAR TRAIN:

1. SHIMS BE REPLACED IN THEIR RESPECTIVE LOCATIONS.
2. SAME NUMBER OF SHIMS BE REPLACED IN EACH RESPECTIVE LOCATION.

**NOTE A:** Bearing M-652 is part of Gear Box Cover Assembly A-1600-4 and cannot be ordered separately.

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

# MISCELLANEOUS PARTS

## Back Cabinet Assembly:

Part No.	Name of Part
G-303-4	Back glass
M-281-14	Lock and keys (2) keyed alike

## Back Door Assembly:

M-281-22	Lock and keys
P-758-17	Lock cam
E-122-19	Transformer

## Front Cabinet Assembly:

M-168-15	Ball
AS-187-18	Ball shooter assembly
A-1540-3	Ball shooter housing
A-100-7	Ball shooter rod
SP-200-24	Ball shooter spring (long)
SP-243	Ball shooter spring (short)
R-108-3	Ball shooter tip
P-711-1	Cigarette holder
A-1533	Coin return cup
P-2210-81	Coin entry plate 5¢
P-1900-47	Coin box
A-2359	Coin slide to slug rejector
CA-1073-2	Front moulding only
AS-1305-18	Front moulding complete
P-4052	Leg
M-106-1	Leg bolt
M-163-4	Leg adjuster
P-2210-48	Plate 5¢

## Front Door Assembly:

Part No.	Name of Part
A-1538-3	Armature plate (AS-277-56)
E-101-45	Coil—coin lockout
AS-277-56	Coin switch assembly 5¢ or 10¢
CA-567-117	Front door only
AS-1971-4	Front door assembly complete
A-254-33	Hinge and bracket
M-281-6	Lock and keys
P-4005	Lock cam
E-108-32	Micro switch 5¢ and 10¢
A-1729-6	Push button—replay
SW-100-157	Push button switch
P-2768-5	Ring for A-1729-6 button
P-2768-7	Ring for M-281-6 lock
M-280-15	Slug rejector 5¢
M-280-16	Slug rejector 10¢

## Panel Assembly:

AS-1315	Ball gate and switch assembly
C-326-9	Light shield post
R-115-4	Rebound rubber
M-170	Rebound spring—double post
R-243	Rubber ring for yellow post
R-243-2	Rubber ring for red post

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