

# Bally<sup>®</sup>

## ABC bowler

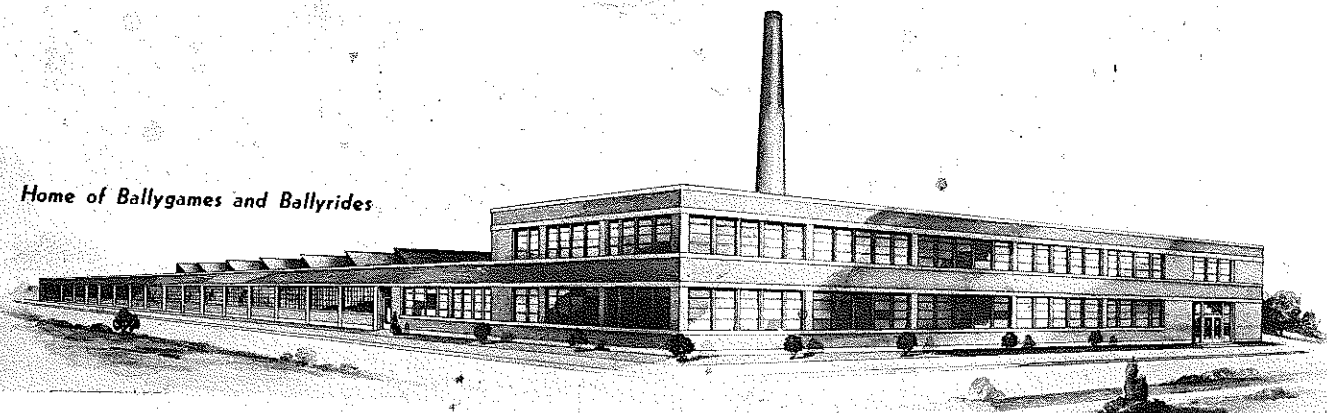
WITH MATCH-SCORE FEATURES  
**Congress bowler**

### OPERATING INSTRUCTIONS AND PARTS CATALOG

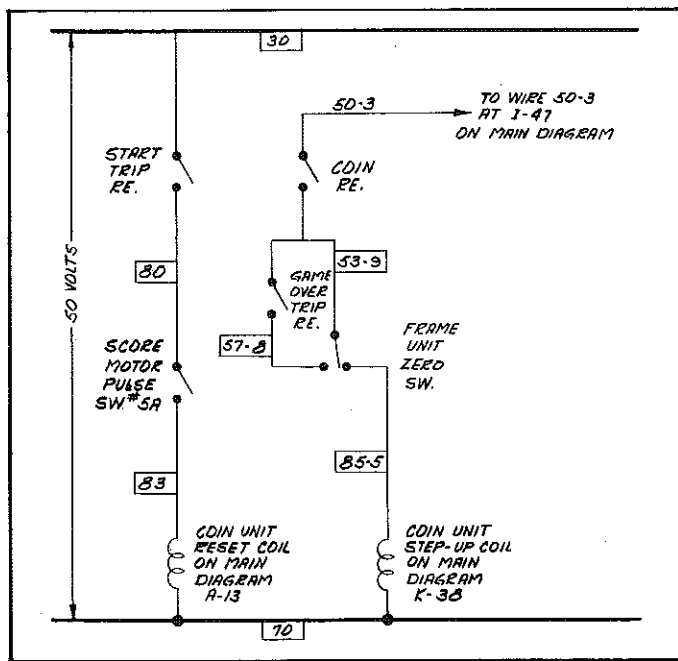
Part Numbers are marked on illustrations  
and a list of miscellaneous parts appears  
on the back cover.

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

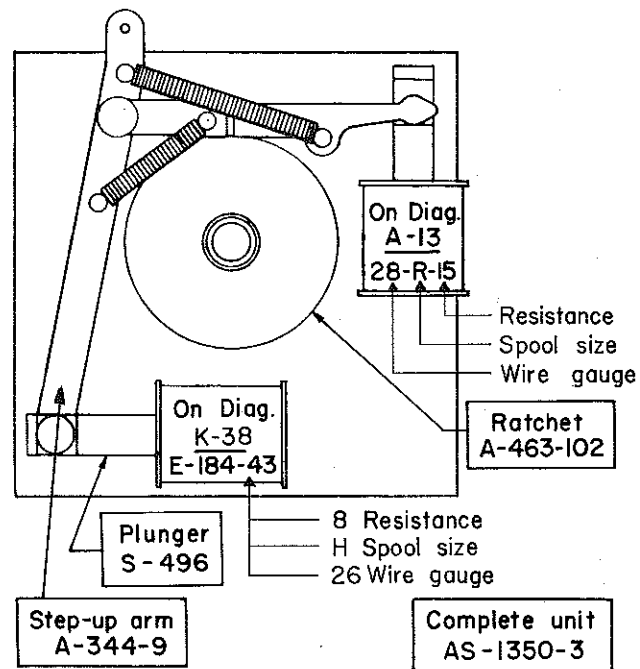
*Home of Ballygames and Ballyrides*



## COIN UNIT STEP-UP AND RESET CIRCUIT



## COIN UNIT viewed from COIL side



## FUNCTION OF COIN UNIT

The Coin Unit has 3 main functions:

- (1.) It indicates the number of players participating;
- (2.) It limits the stepping of the Player-Up Unit by signaling the Player-Up Reset Relay, which in turn will reset the Player-Up Unit (see main diagram G-7 to A-7);
- (3.) It completes a circuit through the Score Motor Disc and all six 1-9 Score Counters for recording the Match Features (see main diagram N-32 to J-36).

**NOTE:** Paragraph 3 above applies only to ABC Bowler.

When the first dime is inserted, Start Relay trips and Score Motor Cam Switch #5A resets the Coin Unit to zero position, which is its correct position for one player. Additional plays will direct the circuit to the Coin Unit Step-Up Coil. This circuit is controlled by a make-break switch on the Frame Unit.

Should this Coin Unit fail to operate:

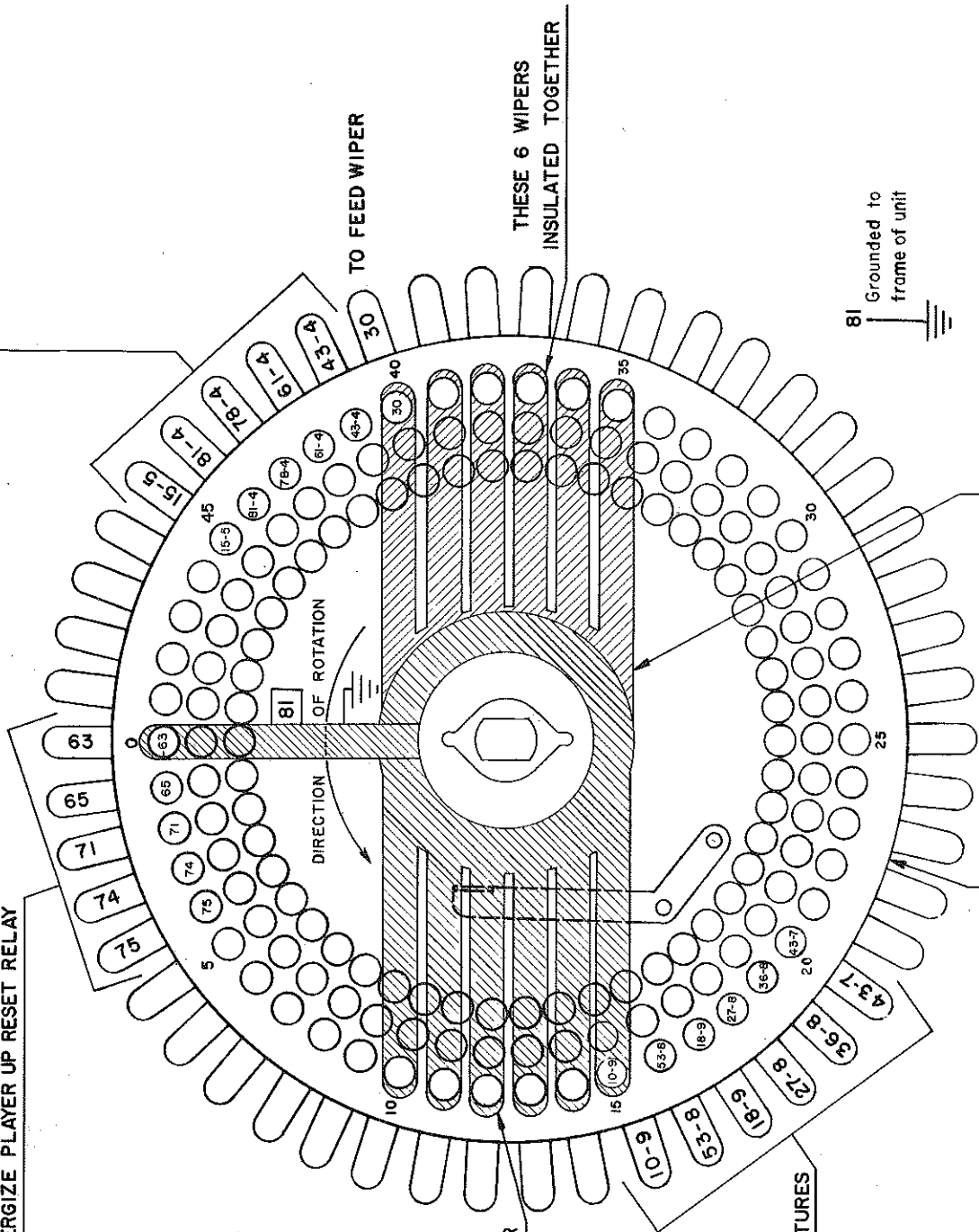
1. Check adjustment of switch on Coin Relay.
2. Check adjustment of make-break switch on Frame Unit. Adjust switch to break bottom blade before it makes top blade.
3. Also check the following normally-closed sets of points on Double Cycle Relay, Shot Relay, Score Motor Switch #9b and 10th Frame Reset Relay.

**COIN UNIT** viewed from **BUTTON** or **WIPER** side.  
 5 step unit. Wipers shown in zero or reset position.

LITES NUMBER OF PLAYER LITES (DIAG. L-4 )

( DIAG. G-7 )

COMPLETES CIRCUIT TO ENERGIZE PLAYER UP RESET RELAY



THESE 6 WIPERS  
 INSULATED TOGETHER

THESE 6 WIPERS  
 INSULATED TOGETHER

81 Grounded to  
 frame of unit

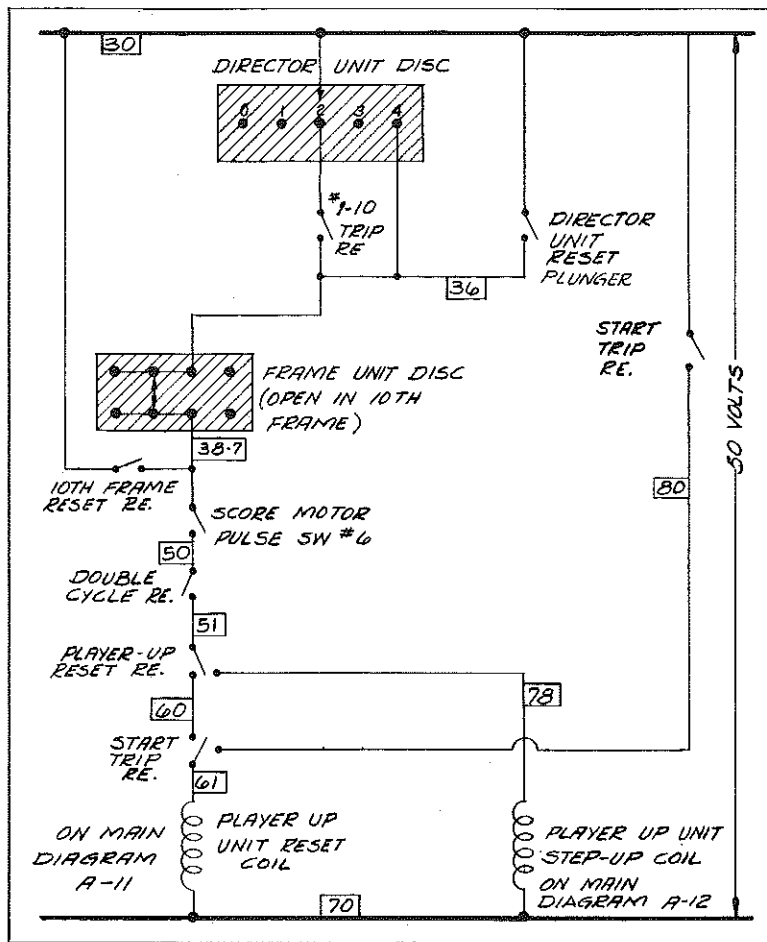
WIPER ASSEMBLY  
 AS-1046-66

DISC WIRED  
 W-583-2

(DIAG. N-32)

COMPLETES CIRCUIT TO RECORD MATCH FEATURES

# PLAYER-UP UNIT STEP-UP AND RESET CIRCUIT



# FUNCTION OF PLAYER-UP UNIT

This unit steps up when each player finishes shooting in each frame, thru Score Motor Pulse Switch #6. The unit will reset when all players finish shooting in each frame, by a signal from the "Player-Up Reset Relay," which is energized thru wiper (A) of this unit. This unit has the following functions:

- A. Completes circuit to "10-90 Relay" thru wiper (B) of this unit.
- B. Energizes "Mark Storage Relays" thru wipers (C) & (D) of this unit.
- C. Lock-in circuit for "Mark Storage Relays" thru wipers (F) of this unit.
- D. Completes circuit to "Player-Up Reset Relay" thru wiper (A) of this unit.
- E. Completes circuit to 1-9 unit step-up coils thru wiper (E) of this unit.
- F. Completes circuit to 10-90 unit step-up coils thru wiper (H) of this unit.
- G. Completes circuit to 100-300 unit step-up coils thru wiper (G) of this unit.
- H. Lites player-up lites thru wiper (I) of this unit.

Should this unit fail to operate properly.

1. Check wiper (A) on Director Unit Disc. (See director unit wiper side on another page.)

2. Check adjustment of switch on #1-10 Trip Relay. (White-brown and yellow-brown wires.)

3. Check wipers (H) and (G) on Frame Unit Disc. (See Frame Unit wiper side on another page.)

4. Check adjustment of Score Motor Pulse Switch #6. (Yellow-black and white wires.)

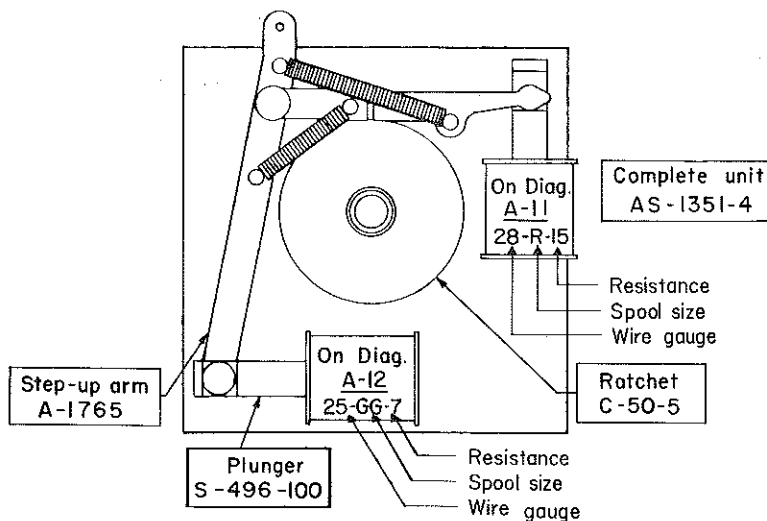
5. Check adjustment of switch on "Double Cycle" relay. (White and white-red wires.)

6. Check make break switch on Player-Up Reset Relay. (White-red wire should make to brown, for resetting unit.)

7. Check make break switch on Start Trip Relay. (Brown-red should make to brown for resetting unit during game. Brown-red should make to black for resetting unit when starting a new game.)

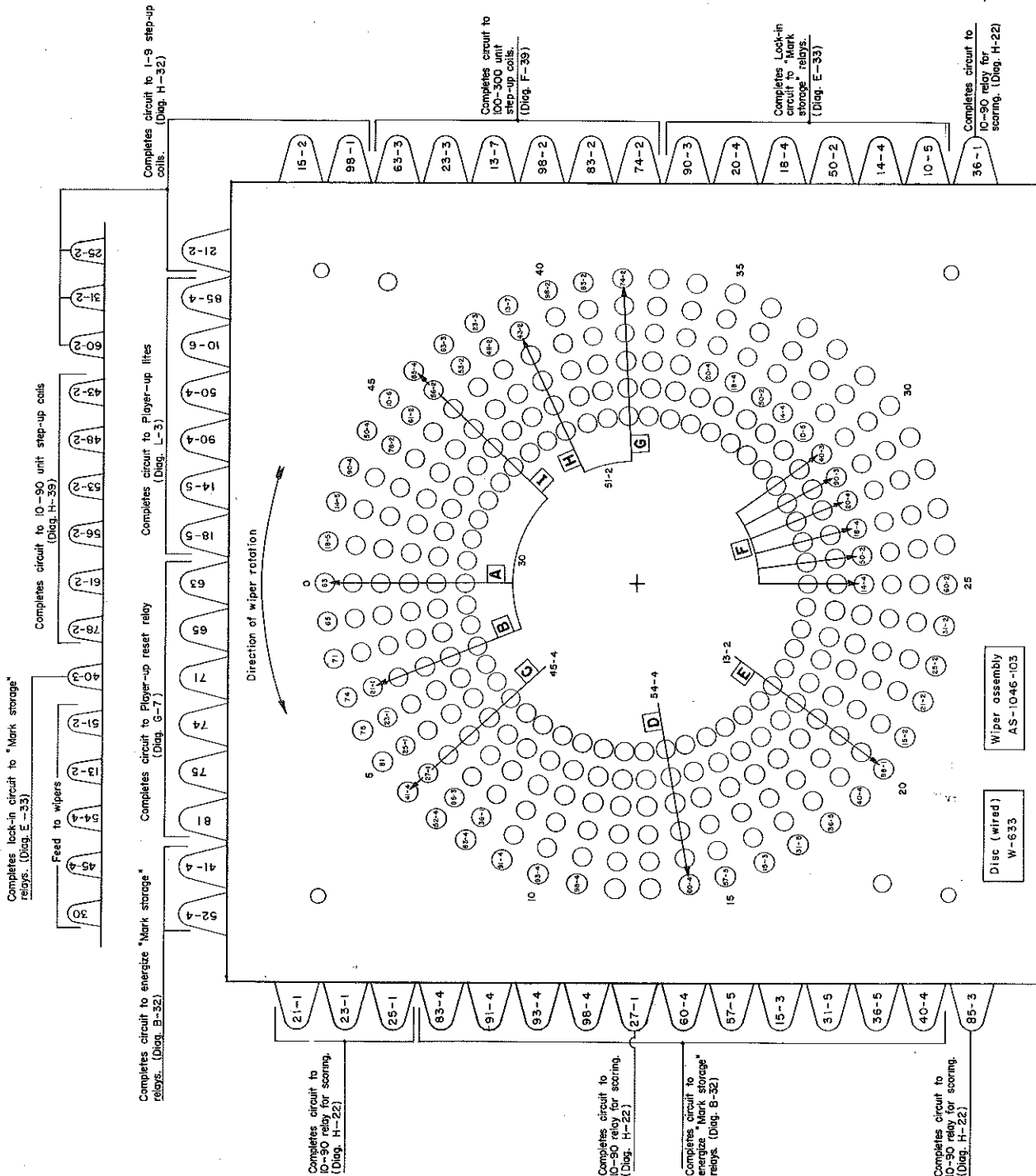
8. If unit fails to reset only when starting a new game, also check switch on Start Trip Relay. (Yellow and black wires.)

# PLAYER-UP UNIT viewed from COIL side

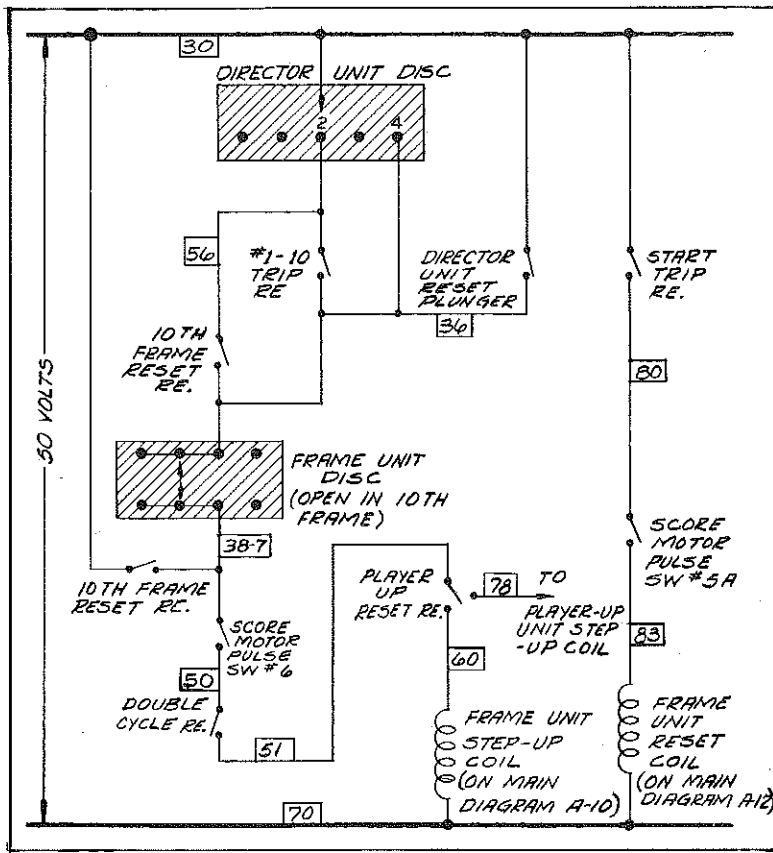


# PLAYER-UP UNIT viewed from BUTTON or WIPER side

## 5 step unit. Wipers shown in zero or reset position



# FRAME UNIT STEP-UP AND RESET CIRCUIT



# FUNCTION OF FRAME UNIT

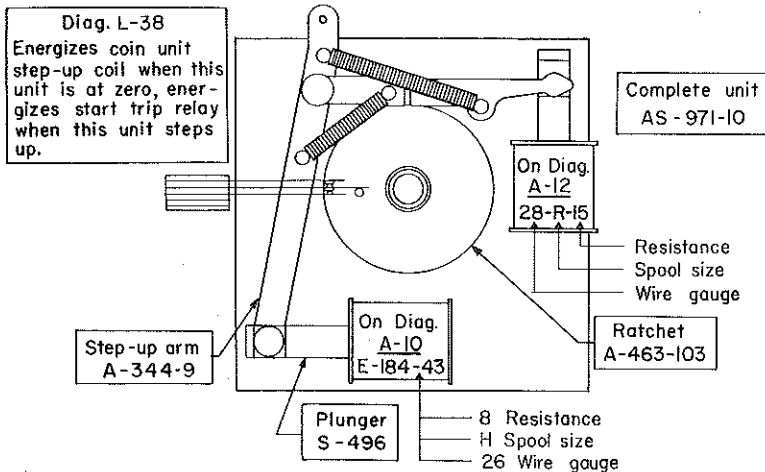
This unit advances when the last player in each frame completes his shot; for example, in a six player game, the unit will not advance until the sixth player has completed his shot. This unit has the following functions:

- A. Illuminates frame lites.
- B. Controls its own stepping for the first 10 frames and breaks circuit to Player-up Step-up and Reset Coils.
- C. Controls 0-9 Match Unit Stepping. (Congress only.)
- D. Records "match features" (Congress only).
- E. Energizes Game Over Trip Relay.
- F. Completes circuit to Star & Trophy Relays. (Congress only.)
- G. Completes circuit to Star, Trophy and "number matched" lites. (Congress only.)

Should this unit fail to operate properly:

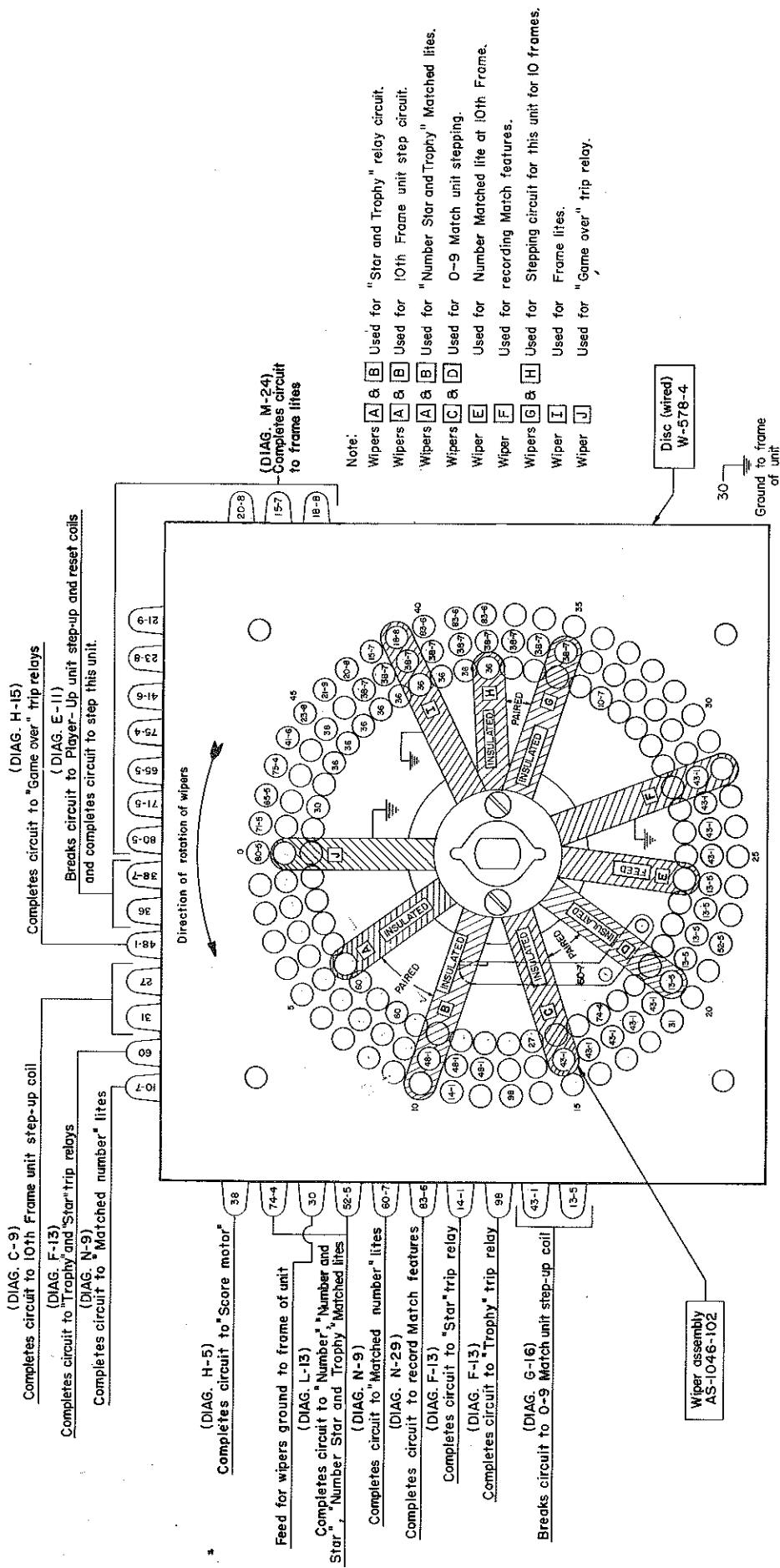
1. Check make-break switch on Player-Up Reset Relay; white red wire should make to brown.
2. Check normally closed switch on Double Cycle Relay.
3. Check wipers "H" and "G" on this unit (see opposite page).
4. Check wiper (A) on Director Unit at 2nd and 4th step. (See wiper side of Director Unit on other page.)
5. Check #1-10 Trip Relay Switch; white-brown wire and yellow-brown.

# FRAME UNIT viewed from COIL side

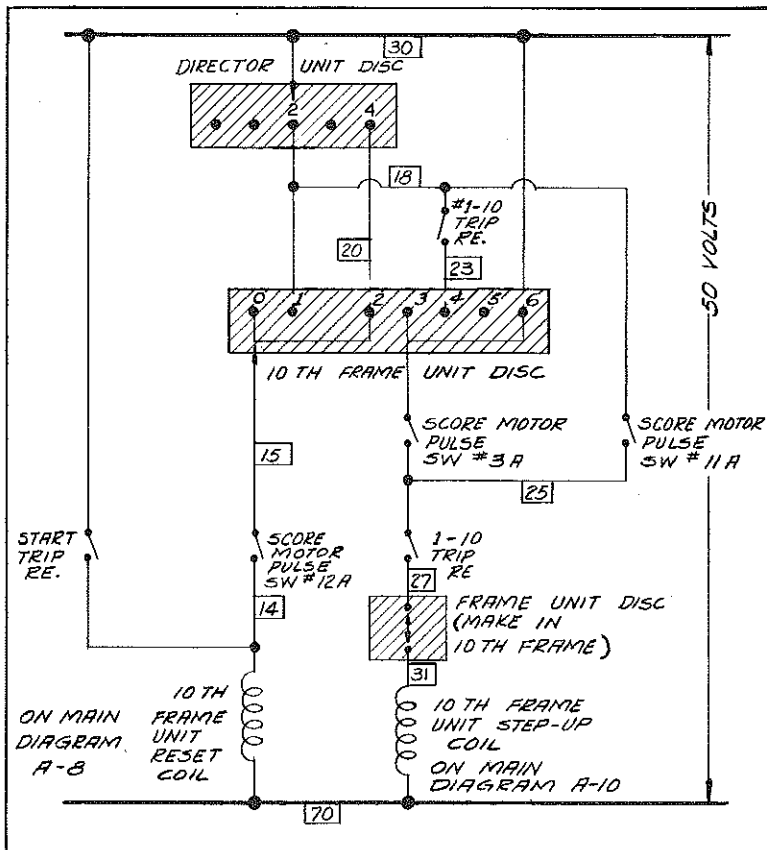


# FRAME UNIT viewed from BUTTON or WIPER side

## 12 step unit. Wipers shown in zero or reset position



# 10th FRAME UNIT STEP-UP AND RESET CIRCUIT



# FUNCTION OF 10th FRAME UNIT

(Operates in 10th Frame only)

This unit provides for extra shots in the 10th frame and indicates by lites the strikes or spares shown in the "Last Frame" section of the backglass.

The unit steps once if a spare is made and twice if a strike is made. Score Motor Cam Switch #3A and #11A do the pulsing to the step-up coil; and #12A does resetting. The Start Relay switch with #30 and #14 wires on it resets the unit at the start of the game.

Should this unit fail to step:

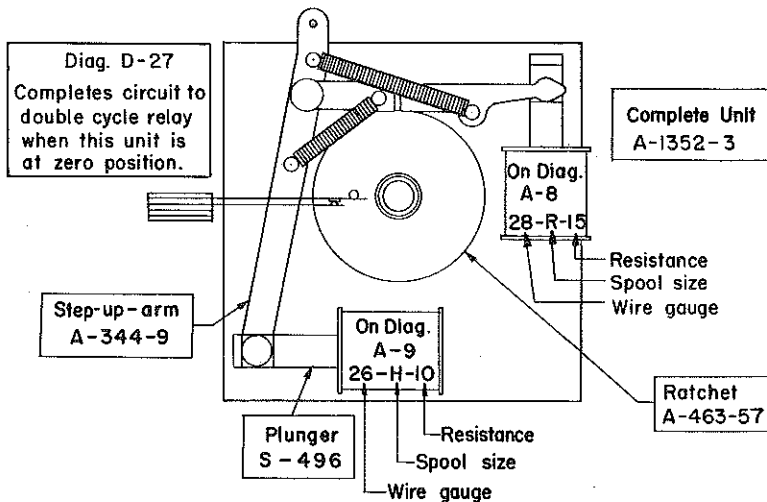
1. Check Score Motor Pulse Switch #3A and #11A.
2. Check Switch on #1-10 Trip Relay with #25 and #27 wire on it.
3. Check wipers "A" and "B" on Frame Unit at 10th step. (See wiper side of Frame Unit on opposite page.)

4. Check wiper "A" on Director Unit at 2nd step. (See wiper side of Director Unit in Manual.)

Should this unit fail to reset properly:

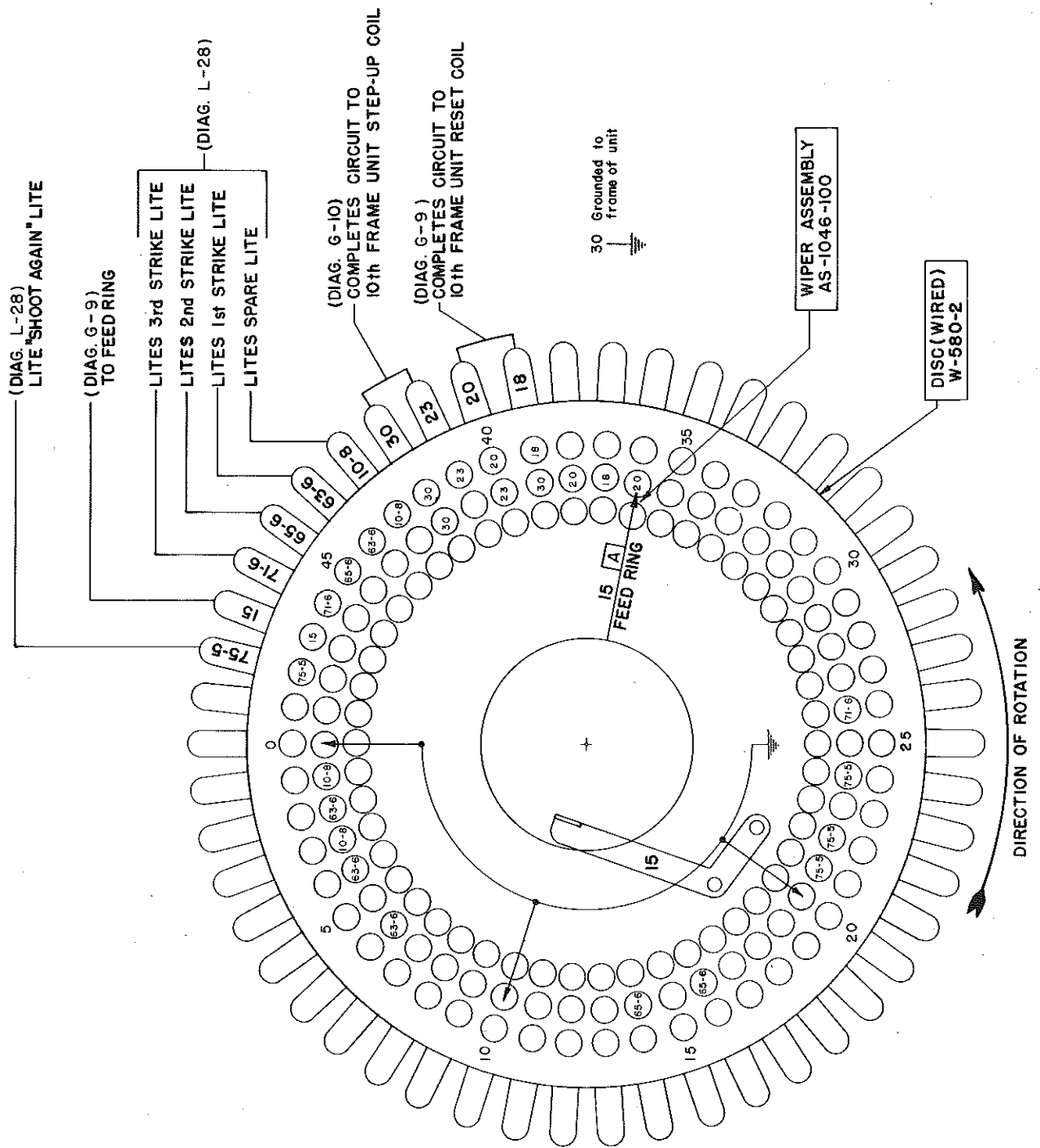
1. Check wiper "A" on Director Unit at 2nd and 4th steps. (See wiper side of Director Unit in Manual.)
2. Check wiper "A" on this unit at "O" 1st, 2nd and 4th steps. (See wiper side of 10th Frame Unit on opposite page.)
3. Check the Start Relay switch with wires #30 and #14 on it.

# 10th FRAME UNIT viewed from COIL side

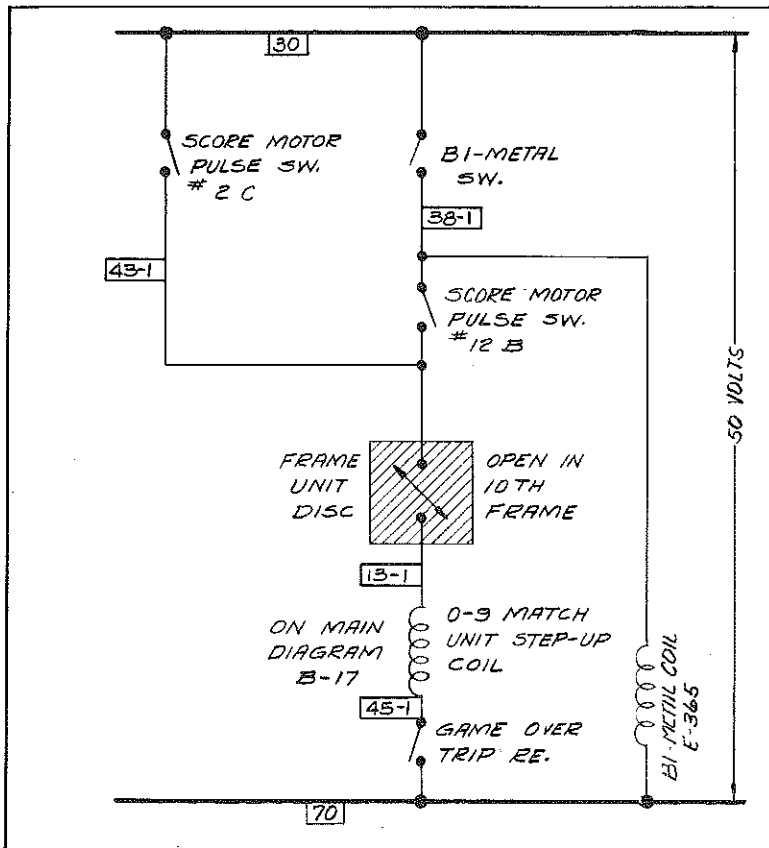




**10th FRAME** viewed from **BUTTON** or **WIPER** side  
6 step unit. Wipers shown in zero or reset position



## 0-9 MATCH UNIT STEP-UP AND RESET CIRCUIT



## FUNCTION OF 0-9 MATCH UNIT

### CONGRESS ONLY

This unit completes a circuit to the Star and Trophy Relays and also the "number matched" lites. It also completes a circuit to the meters for recording Match Feature Hits.

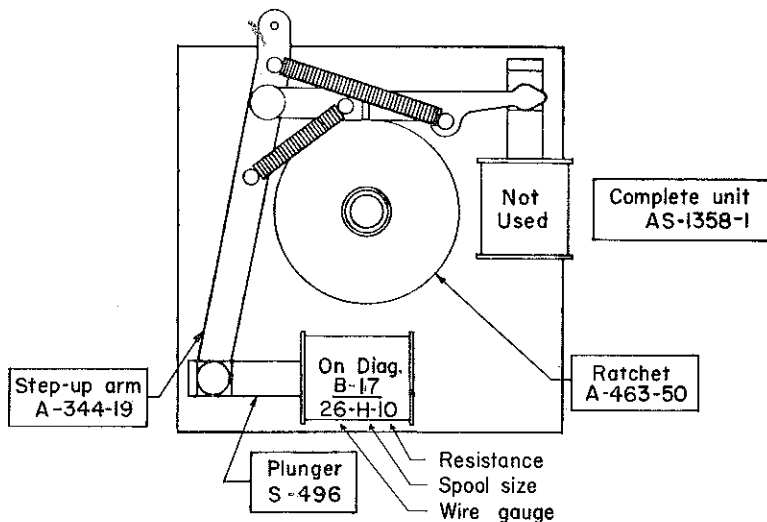
The unit steps once every time Score Motor Cam Switch #2C closes.

When the Bi-Metal Switch closes additional steps occur thru Score Motor Cam Switch #12B. This circuit provides the scramble for stepping the unit.

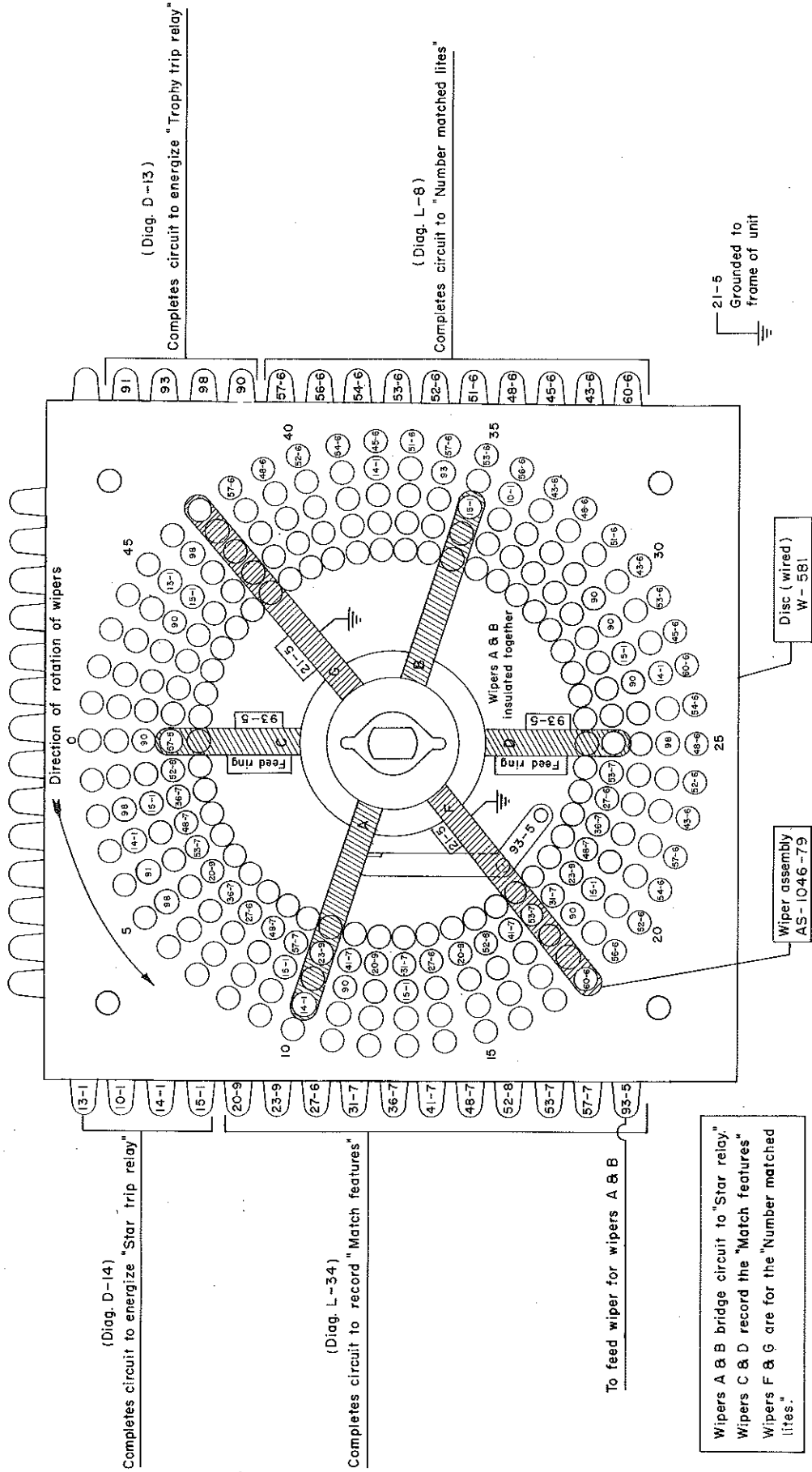
Should this unit fail to operate properly:

1. Check pair of wipers (C) and (D) on Frame Unit. (See Frame Unit wiper side on other page.)
2. Check operation of Bi-Metal Switch, located behind Score Motor.

## 0-9 MATCH UNIT viewed from COIL side



**0-9 MATCH UNIT** viewed from **BUTTON** or **WIPER** side  
 Continuous step unit. Wipers shown in zero or reset position



(Diag. D-14)  
 Completes circuit to energize "Star trip relay"

(Diag. L-34)  
 Completes circuit to record "Match features"

(Diag. D-13)  
 Completes circuit to energize "Trophy trip relay"

(Diag. L-8)  
 Completes circuit to "Number matched lites"

Wipers A & B bridge circuit to "Star relay."  
 Wipers C & D record the "Match features"  
 Wipers F & G are for the "Number matched lites."

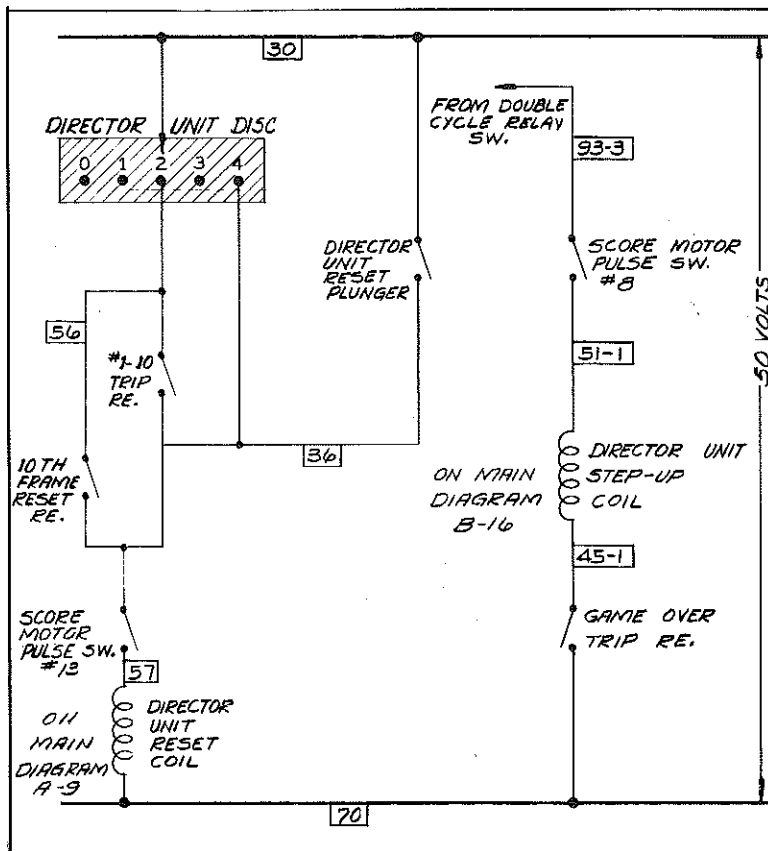
To feed wiper for wipers A & B

Disc (wired)  
 W-581

Wiper assembly  
 AS-1046-79

21-5  
 Grounded to  
 frame of unit

## DIRECTOR UNIT STEP-UP AND RESET CIRCUIT



## FUNCTION OF DIRECTOR UNIT

This unit steps 2 steps when a strike is made and 4 steps when a spare or blow (one to nine pins) is made.

The unit resets every time all ten pins are tripped or when the 10th Frame Reset Relay operates in the 10th frame, thru wiper (A) on this unit.

The unit is used to signal the following count relays; Count 30, Count Pins + 20, Count 20, Count Pins + 10, Count Pins, Double Mark and Double Cycle.

This unit also directs a circuit through the Player-Up Disc to energize the Mark Storage Relays of which there are two for each player. When either #2 or #1 Mark Storage Relay pulls in, the corresponding Mark Transfer Relay will pull in at the end of the Score Motor Cycle thru Cam Switch #1D or #1E.

Should this unit fail to step properly:

1. Check the normally closed side of the make-break switch on the Double Cycle Relay. (Yellow makes to gray-yellow.)

2. Check Cam Switch #8.

Should this unit fail to reset properly:

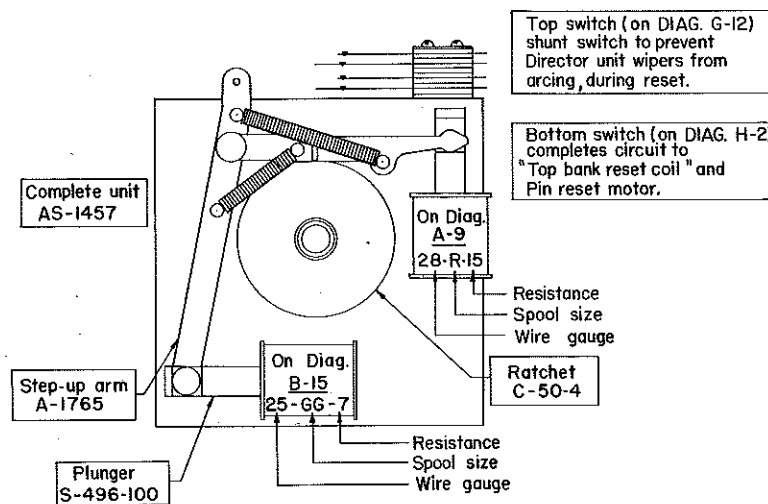
1. Be sure face of contact plate is clean and has a thin film of lubricant on it.

2. Check circuit thru wiper (A) on this unit. (See wiper side on opposite page.)

3. Check adjustment of switch on 1-10 Relay. (White-brown and yellow-brown wires.)

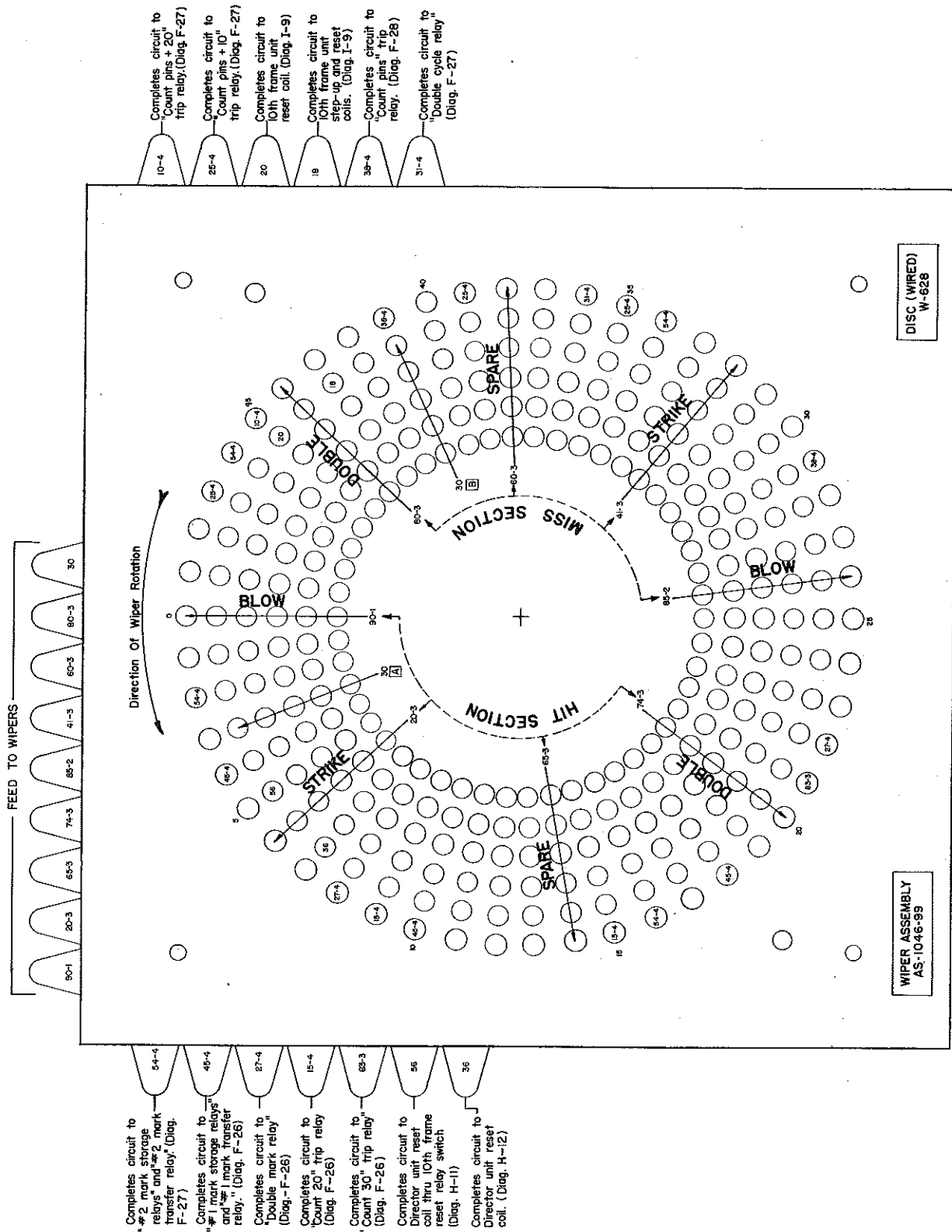
4. If failure occurs at 10th frame, check 10th Frame Reset Relay Circuit.

## DIRECTOR UNIT viewed from COIL side



# DIRECTOR UNIT viewed from BUTTON or WIPER side

4 step unit. Wipers shown in zero or reset position



- 54-4 Completes circuit to #2 mark storage relays\* and #2 mark transfer relay. (Diag. F-27)
- 45-4 Completes circuit to #1 mark storage relays\* and #1 mark transfer relay. (Diag. F-26)
- 27-4 Completes circuit to "Double mark relay" (Diag. F-26)
- 15-4 Completes circuit to "Count 20" trip relay (Diag. F-26)
- 65-3 Completes circuit to "Count 30" trip relay" (Diag. F-26)
- 56 Completes circuit to Director unit reset coil thru 10th frame reset relay switch (Diag. H-11)
- 36 Completes circuit to Director unit reset coil. (Diag. H-12)

- 10-4 Completes circuit to "Count pins + 20" trip relay. (Diag. F-27)
- 25-4 Completes circuit to "Count pins + 10" trip relay. (Diag. F-27)
- 20 Completes circuit to 10th frame unit reset coil. (Diag. I-9)
- 19 Completes circuit to 10th frame unit step-up and reset coils. (Diag. I-9)
- 38-4 Completes circuit to "Count pins" trip relay. (Diag. F-28)
- 31-4 Completes circuit to "Double cycle relay" (Diag. F-27)

DISC (WIRED)  
W-628

WIPER ASSEMBLY  
AS-1046-99

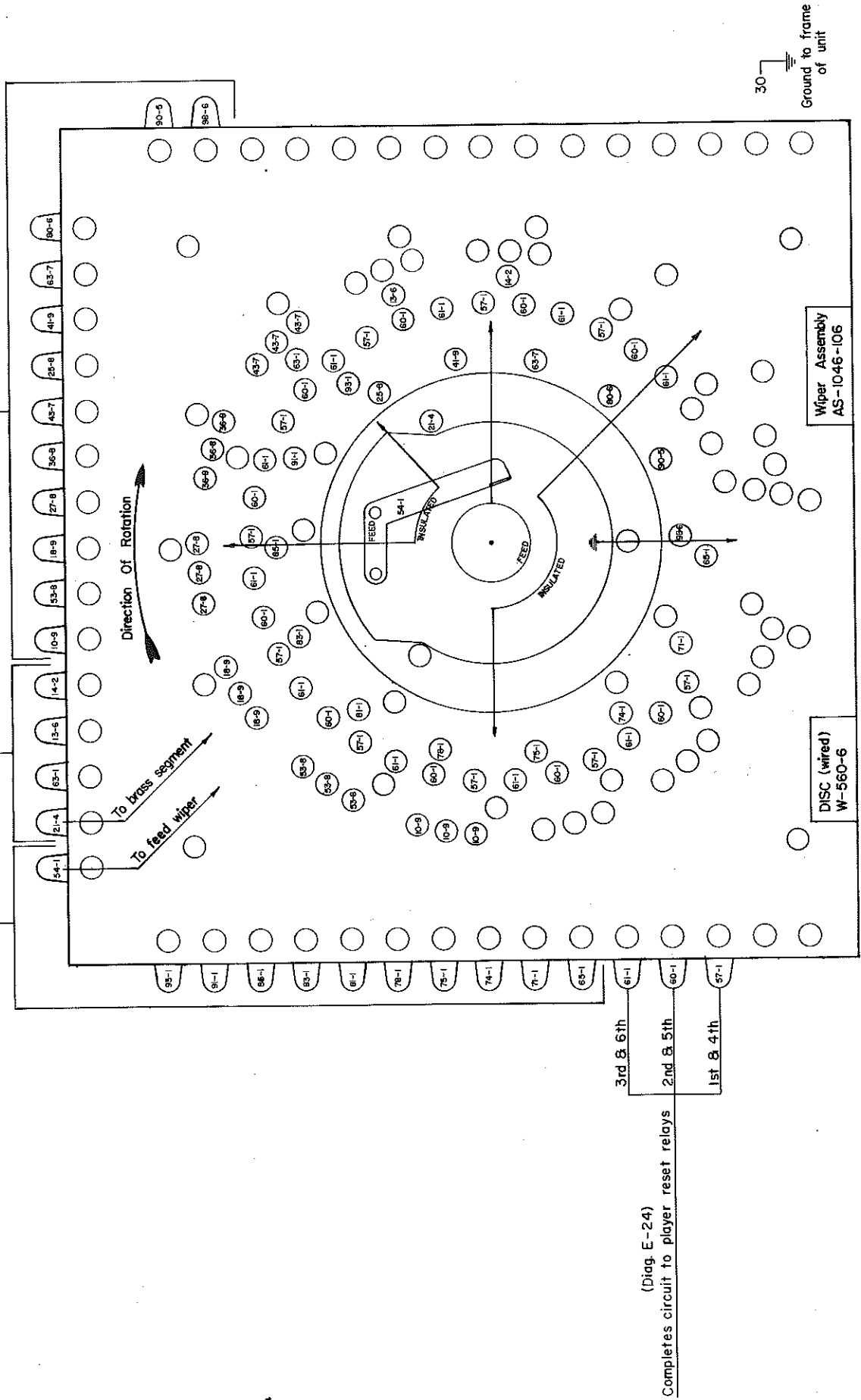
# SCORE MOTOR DISC viewed from BUTTON or WIPER side

Wipers shown in zero or reset position

(Diag. D-19)  
Completes circuit to energize "Pin Trip Relay" No's 1 thru 10

(Diag. F-23)  
Feeds "10-90 Relay" for scoring

(Diag. M-32)  
Search circuit for "Match Features"



(Diag. E-24)

Completes circuit to player reset relays

3rd & 6th

2nd & 5th

1st & 4th

**(TOP) 11 TRIP RELAY BANK CHART SWITCHES LISTED ALPHABETICALLY FROM LEFT TO RIGHT — All Trip Relay Coils E-184-103**

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCH
(Top) BANK RESET COIL (E-184-106)	D-2	70-P 50-P	Orange (Plastic) White (Plastic)	Energized by score motor pulse switch #4.
GAME OVER TRIP COIL (E-184-103)	B-15	48-1 45-1	Green-Black Green-White	Operates at end of game or when anti-cheat relay drops out.
A S.P.D.T.	N-14	20-7 60-7 31-6	Blue Brown Yellow-Red	Breaks circuit to frame lites and mark lites, completes circuit to game-over lite.
B N.C.	A-16	45-1 70	Green-White Orange	Breaks circuit to game over trip, director unit step-up, puck relay, shot trip, 0-9 match unit step-up, and bi-metal switch coils.
C N.C.	M-1	51-4 85-4	White-Red Black-White	Breaks circuit to 1st player-up lite.
D N.C.	H-47	43-3 50-3	Green-Yellow White	Opens circuit to all panel switches.
E N.C.	I-31	27-2 40-3	Blue-Orange Green	In series with switch on start trip relay. Breaks circuit to player mark drop out relay.
F N.O.	M-10	60-7 91-6	Brown Gray-Red	Completes circuit to matched number lites.
G N.O.	L-37	53-9 57-8	White-Yellow White-Orange	Completes circuit to start relay.

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**(TOP) 11 TRIP RELAY BANK CHART — CONTINUED**

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCH
START TRIP COIL (E-184-103)	J-38	57-8 70	White-Orange Orange	Energized on 1st coin played.
A S.P.D.T.	A-22	23-4 70 56-1	Blue-Yellow Orange White-Brown	Directs circuit from 1-9 and 10-90 relays, to all 3 player reset relays when 1st coin is played.
B S.P.D.T.	C-11	60 61 80	Brown Brown-Red Black	Directs circuit from player-up unit reset coil, to frame unit, coin unit, star & trophy trip reset coils.
C N.C.	L-7	21-5 52-5	Blue-Red White-Blue	Breaks circuit to 0-9 match lites, when 1st coin is played.
D N.C.	M-30	74-5 83-6	Orange-Green Black-Yellow	Safety circuit for match circuit when 1st coin is played.
E N.C.	I-32	27-2 30	Blue-Orange Yellow	In series with switch on game over trip relay. Breaks circuit to player mark drop out relay.
F N.C.	D-37	41-8 41-5	Green-Red Gray-Red	Breaks circuit to 1st player 100-300 unit.
G N.O.	D-8	14 30	Red-Green Yellow	Completes circuit to 10th frame reset relay and 10th frame unit reset coil. Also energizes player-up reset relay thru switch on 10th frame reset relay.
H N.O.	I-13	80 30	Black Yellow	Completes circuit to player-up unit, frame unit, coin unit, and star & trophy reset coils.

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**(TOP) 11 TRIP RELAY BANK CHART — CONTINUED**

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCH
SHOT TRIP COIL (E-184-103)	B-16	45-1 45-1	Green-White Green-White	Operates on 1st shot.
A S.P.D.T.	D-16	45-1 20-2 31-1	Green-White Blue Yellow-Red	Breaks circuit to this relay and completes circuit to puck relay.
B N.C.	I-45	63-4 93-3	Brown-Yellow Gray-Yellow	Safety circuit for panel switches.
C N.O.	I-6	10 30	Red Yellow	Score motor unit circuit.
COUNT PINS + 10 TRIP COIL (E-184-103)	A-27	25-4 70	Blue-White Orange	Energized thru miss section of director unit disc for scoring, when all pins not made on 1st shot after a spare, or 2nd shot after a strike, or double strike.
A N.C.	B-27	25-4 25-4	Blue-White Blue-White	Breaks circuit to this coil when tripped.
B N.O.	D-22	53-1 54-1	White-Yellow White-Green	Completes circuit to 1-9 relay thru score motor disc, for 1 to 9 count.
C N.O.	I-23	63-1 30	Brown-Yellow Yellow	Completes circuit to 10-90 relay thru score motor disc, for ten count.

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**(TOP) 11 TRIP RELAY BANK CHART — CONTINUED**

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCH
COUNT 20 TRIP COIL (E-184-103)	A-26	15-4 70	Red-White Orange	Energized thru hit section of director unit disc for scoring, when strike follows spare or spare follows strike.
A N.C.	B-26	15-4 15-4	Red-White Red-White	Breaks circuit to this coil when tripped.
B N.O.	G-23	13-6 30	Red-Yellow Yellow	Completes circuit to 10-90 relay thru score motor disc, for 2nd ten count.
C N.O.	J-23	63-1 30	Brown-Yellow Yellow	Completes circuit to 10-90 relay thru score motor disc, for 1st ten count.
COUNT 30 TRIP COIL (E-184-103)	A-25	83-3 70	Black-Yellow Orange	Energized thru hit section of director unit disc for scoring, when 3 strikes in a row are made.
* A N.C.	B-25	83-3 83-3	Black-Yellow Black-Yellow	Breaks circuit to this coil when tripped.
B N.O.	H-24	14-2 30	Red-Green Yellow	Completes circuit to 10-90 relay thru score motor disc, for 3rd ten count.
C N.O.	F-24	13-6 30	Red-Yellow Yellow	Completes circuit to 10-90 relay thru score motor disc, for 2nd ten count.
D N.O.	J-23	63-1 30	Brown-Yellow Yellow	Completes circuit to 10-90 relay thru score motor disc, for 1st ten count.

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**(TOP) 11 TRIP RELAY BANK CHART — CONTINUED**

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCH
COUNT PINS + 20 TRIP COIL (E-184-103)	A-25	10-4 70	Red Orange	Energized thru miss section of director unit disc for scoring, when all pins not made on 1st shot after double strikes.
A N.C.	B-25	10-4 10-4	Red Red	Breaks circuit to this coil when tripped.
B N.O.	C-22	53-1 54-1	White-Yellow White-Green	Completes circuit to 1-9 relay thru score motor disc, for 1 to 9 count.
C N.O.	G-24	13-6 30	Red-Yellow Yellow	Completes circuit to 10-90 relay thru score motor disc, for 2nd ten count.
D N.O.	I-22	63-1 30	Brown-Yellow Yellow	Completes circuit to 10-90 relay thru score motor disc, for 1st ten count.
COUNT PINS TRIP COIL (E-184-103)	A-28	38-4 70	Yellow-Black Orange	Energized thru miss section of director unit disc for scoring, when all ten pins not made on 1st & 2nd shots after a blow, or spare.
A N.C.	B-28	38-4 38-4	Yellow-Black Yellow-Black	Breaks circuit to this coil when tripped.
B N.O.	D-22	53-1 54-1	White-Yellow White-Green	Completes circuit to 1-9 relay thru score motor disc, for 1 to 9 count.
#2 MARK TRANSFER TRIP COIL (E-184-103)	A-29	56-4 70	White-Brown Orange	Energized by score motor switch #1D, or switch on double mark relay.
A S.P.D.T.	H-28	75-2 80-1 40-2	Orange-White Black Green	Directs circuit to count, double mark, double cycle, mark transfer #1 & #2, and player mark storage relays, thru director unit disc.
B S.P.D.T.	I-28	38-2 50-1 10-3	Yellow-Black White Red	Same as above.
C N.C.	B-29	56-4 56-4	White-Brown White-Brown	Breaks circuit to this coil when tripped.

CONCLUDED ON NEXT PAGE

**(TOP) 11 TRIP RELAY BANK CHART — CONCLUDED**

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCH
#1 MARK TRANSFER TRIP COIL (E-184-103)	A-30	53-4 70	White-Yellow Orange	Energized by score motor switch #1E, or switch on double mark relay.
A S.P.D.T.	I-29	80-1 65-2 50-1	Black Brown-White White	Directs circuit to count, double mark, double cycle, mark transfer #1 & #2, and player mark storage relays, thru director unit disc.
B N.C.	B-30	53-4 53-4	White-Yellow White-Yellow	Breaks circuit to this coil when tripped.
#1-10 TRIP COIL (E-184-103)	A-6	52 70	White-Blue Orange	Trips when strike or spare is made.
A S.P.D.T.	H-28	85-2 75-2 90-1	Black-White Orange-White Gray	Directs circuit to count, double mark, double cycle, mark transfer #1 & #2, and player mark storage relays, thru director unit disc.
B S.P.D.T.	H-27	41-3 40-2 20-3	Green-Red Green Blue	Same as above.
C S.P.D.T.	I-27	60-3 38-2 65-3	Brown Yellow-Black Brown-White	Same as above.
D S.P.D.T.	I-27	80-3 10-3 74-3	Black Red Orange-Green	Same as above.
E N.C.	H-10	18 23	Red-Black Blue-Yellow	Breaks 10th frame unit reset circuit when double strike is made in 10th frame.
F N.O.	G-11	36 56	Yellow-Brown White-Brown	Completes circuit to director unit reset coil thru director unit disc.
G N.C.	B-6	52 52	White-Blue White-Blue	Breaks circuit to this coil when tripped.
H N.O.	E-10	25 27	Blue-White Blue-Orange	Completes circuit to step 10th frame unit when spare or strike is made in 10th frame.

**(BOTTOM) 12 TRIP RELAY BANK CHART SWITCHES LISTED ALPHABETICALLY FROM LEFT TO RIGHT — All Trip Relay Coils E-184-103**

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCH
(Bottom) BANK RESET COIL (E-184-106)	E-3	80-P 50-P	Black (Plastic) White (Plastic)	Energized by score motor pulse switch #5B.
#2-8 TRIP COIL (E-184-103)	A-44	48-3 70	Green-Black Orange	Energized by #4 or #5 panel switches.
A N.O.	G-6	41 43	Green-Red Green-Yellow	Series circuit to 1-10 trip relay.
B N.O.	I-18	71-1 30	Orange-Red Yellow	Energizes #2 pin relay.
C N.O.	I-20	85-1 30	Black-White Yellow	Energizes #8 pin relay.
D N.C.	B-44	48-3 48-3	Green-Black Green-Black	Breaks circuit to this coil when tripped.
E S.P.D.T.	E-46	61-3 53-3 54-3	Brown-Red White-Yellow White-Green	Directs circuit from #6 trip coil to #4 trip coil.

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**(BOTTOM) 12 TRIP RELAY BANK CHART - CONTINUED**

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCH
#3-9 TRIP COIL (E-184-103)	A-46	57-3 70	White-Orange Orange	Energized by #6 or #7 panel switches.
A N.O.	F-6	43 45	Green-Yellow Green-White	Series circuit to 1-10 trip relay.
B N.O.	J-18	74-1 30	Orange-Green Yellow	Energizes #3 pin relay.
C N.O.	F-20	91-1 30	Gray-Red Yellow	Energizes #9 pin relay.
D N.C.	C-46	54-3 56-3	White-Green White-Brown	Completes circuit to #4 trip coil.
E N.C.	B-46	57-3 57-3	White-Orange White-Orange	Breaks circuit to this coil when tripped.
#4 TRIP COIL (E-184-103)	A-46	56-3 70	White-Brown Orange	Energized by #18 panel switch.
A N.O.	F-6	45 53	Green-White White-Yellow	Series circuit to 1-10 trip relay.
B N.O.	I-18	75-1 30	Orange-White Yellow	Energizes #4 pin relay.
C N.C.	E-48	21-8 83-5	Blue-Red Black-Yellow	Breaks circuit to #4-7-8 trip coil.
D N.C.	B-46	56-3 56-3	White-Brown White-Brown	Breaks circuit to this coil when tripped.

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**(BOTTOM) 12 TRIP RELAY BANK CHART — CONTINUED**

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCH
#5 TRIP COIL (E-184-103)	A-46	81-3 70	Black-Red Orange	Energized by #13 and #16 panel switches, or #1 trip coil.
A N.O.	E-6	27-7 48	Blue-Orange Green-Black	Series circuit to 1-10 trip relay.
B N.O.	J-19	78-1 30	Orange-Black Yellow	Energizes #5 pin relay.
C N.C.	B-46	81-3 81-3	Black-Red Black-Red	Breaks circuit to this coil when tripped.
#6 TRIP COIL (E-184-103)	A-45	61-3 70	Brown-Red Orange	Energized by panel switches #3 & #4, or #7 & #8 when 2-8 is up and 2 is down.
A N.O.	D-6	27-7 54	Blue-Orange White-Green	Series circuit to 1-10 trip relay.
B N.O.	H-20	81-1 30	Black-Red Yellow	Energizes #6 pin relay.
C N.C.	C-48	13-4 98-3	Red-Yellow Gray-Black	Breaks circuit to #6-9-10 trip coil.
D N.C.	B-45	61-3 61-3	Brown-Red Brown-Red	Breaks circuit to this coil when tripped.

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**(BOTTOM) 12 TRIP RELAY BANK CHART — CONTINUED**

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCH
#1 TRIP COIL (E-184-103)	A-44	45-3 70	Green-White Orange	Energized by #1 or #2 panel switches.
A N.O.	H-5	30 41	Yellow Green-Red	Series circuit to 1-10 trip relay.
B N.O.	I-17	65-1 30	Brown-White Yellow	Energizes #1 pin relay.
C N.O.	E-46	52-3 53-3	White-Blue White-Yellow	Completes circuit to #4 and #6 trip coils.
D N.O.	G-49	43-3 80-4	Green-Yellow Black	Keeps panel switches #13, 14, 15, 16, 18, and 19 alive when this coil is energized.
E N.O.	F-47	43-3 81-3	Green-Yellow Black-Red	Completes circuit to #5 trip coil.
F N.C.	B-44	45-3 45-3	Green-White Green-White	Breaks circuit to this coil when tripped.
G N.O.	G-5	10 40	Red Green	In series with switch on shot trip relay. Completes circuit to 5 pin switches trip coil.

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**(BOTTOM) 12 TRIP RELAY BANK CHART — CONTINUED**

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCH
#7 TRIP COIL (E-184-103)	A-47	78-3 70	Orange-Black Orange	Energized by #9 panel switch, also by #14 and #16 panel switches when 1 is down.
A N.O.	E-6	48 53	Green-Black White-Yellow	Series circuit to 1-10 trip relay.
B N.O.	J-19	83-1 30	Black-Yellow Yellow	Energizes #7 pin relay.
C N.O.	C-46	56-3 61-3	White-Brown Brown-Red	Completes circuit to #4 and #6 trip coils.
D N.C.	E-48	75-3 91-3	Orange-White Gray-Red	Breaks circuit to #10 trip coil. Part of 7-10 pick-up.
E N.C.	B-47	78-3 78-3	Orange-Black Orange-Black	Breaks circuit to this coil when tripped.
#10 TRIP COIL (E-184-103)	A-48	91-3 70	Gray-Red Orange	Energized by #12 panel switch.
A N.O.	C-6	52 54	White-Blue White-Green	Series circuit to 1-10 trip relay.
B N.O.	E-20	93-1 30	Gray-Yellow Yellow	Energizes #10 pin relay.
C N.O.	C-46	56-3 61-3	White-Brown Brown-Red	Completes circuit to #4 trip coil.
D N.C.	E-49	31-3 78-3	Yellow-Red Orange-Black	Breaks circuit to #7 trip coil. Part of 7-10 pick-up.
E N.C.	B-48	91-3 91-3	Gray-Red Gray-Red	Breaks circuit to this coil when tripped.

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**(BOTTOM) 12 TRIP RELAY BANK CHART — CONTINUED**

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCH
#4-7-8 TRIP COIL	A-48	21-8 70	Blue-Red Orange	Energized by #9 or #10 panel switch.
A N.O.	F-5	45 48	Green-White Green-Black	Series circuit to 1-10 trip relay.
B N.O.	H-19	75-1 30	Orange-White Yellow	Energizes #4 pin relay.
C N.O.	H-20	83-1 30	Black-Yellow Yellow	Energizes #7 pin relay.
D N.O.	G-20	85-1 30	Black-White Yellow	Energizes #8 pin relay.
E N.C.	B-48	21-8 21-8	Blue-Red Blue-Red	Breaks circuit to this coil when tripped.
#6-9-10 TRIP COIL	A-48	13-4 70	Red-Yellow Orange	Energized by #11 or #12 panel switches.
A N.O.	D-5	27-7 52	Blue-Orange White-Blue	Series circuit to 1-10 trip relay.
B N.O.	H-20	81-1 30	Black-Red Yellow	Energizes #6 pin relay.
C N.O.	E-20	91-1 30	Gray-Red Yellow	Energizes #9 pin relay.
D N.O.	E-21	93-1 30	Gray-Yellow Yellow	Energizes #10 pin relay.
E N.C.	B-48	13-4 13-4	Red-Yellow Red-Yellow	Breaks circuit to this coil when tripped.

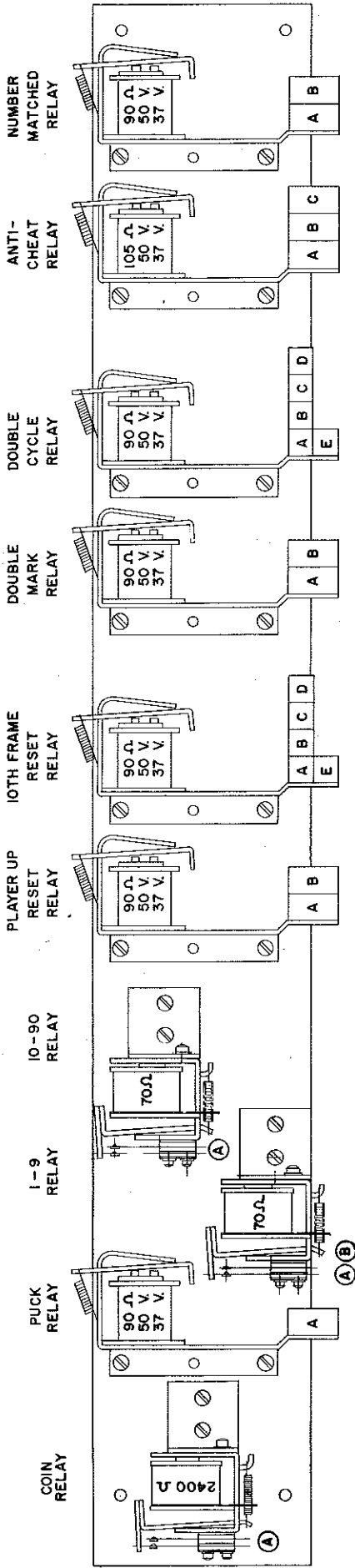
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**(BOTTOM) 12 TRIP RELAY BANK CHART — CONCLUDED**

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCH
#5-8-9 TRIP COIL (E-184-103)	A-45	51-3 70	White-Red Orange	Energized by #3 or #4 panel switches.
A N.O.	D-5	27-7 48	Blue-Orange Green-Black	Series circuit to 1-10 trip relay.
B N.O.	I-19	78-1 30	Orange-Black Yellow	Energizes #5 pin relay.
C N.O.	G-20	85-1 30	Black-White Yellow	Energizes #8 pin relay.
D N.O.	F-20	91-1 30	Gray-Red Yellow	Energizes #9 pin relay.
E N.C.	B-45	51-3 51-3	White-Red White-Red	Breaks circuit to this coil when tripped.
5 PIN SWITCHES COIL (E-184-103)	A-5	41 70	Green-Red Orange	Operates on 1st shot providing the #1 relay is tripped. This relay in turn controls the operation of the six panel switches between #8 and #9 bowling pins.
A N.C.	F-49	71-3 80-4	Orange-Red Black	Breaks circuit to numbers 13, 14, 15, 16, 18, 19 and 20A panel switches.
B N.C.	E-5	40 40	Green Green	Breaks circuit to this coil when tripped.

# 10 RELAY BANK PICTORIAL VIEW

# NUMBERS CORRESPOND TO SWITCH CHART



**COIL PART NUMBERS**  
 70 Ω ----- C-2342-332  
 90 Ω 50 V ----- C-2794-1  
 105 Ω 50 V ----- C-2794-23  
 2400 Ω ----- C-2342-110

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

**ARMATURE PLATE PART NUMBERS**  
 COIN RELAY ----- Z-44-44-1A  
 PUCK RELAY ----- Z-148-2  
 1-9 RELAY ----- Z-44-2-1A  
 10-90 RELAY ----- Z-44-12-1A  
 PLAYER UP RESET RELAY ----- Z-148-2  
 10TH FRAME RESET RELAY ----- Z-148-3  
 DOUBLE MARK RELAY ----- Z-148-2  
 DOUBLE CYCLE RELAY ----- Z-148-3  
 ANTI CHEAT RELAY ----- Z-148-1A  
 NUMBER MATCHED RELAY ----- Z-148-2

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

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCH
COIN RELAY COIL	D-4	20-1P 50-P	Blue (Plastic) White (Plastic)	Energizes for every coin played.
A N.O.	M-38	50-3 53-9	White White-Yellow	Energizes start relay on 1st coin, and coin unit on succeeding coins.
PUCK RELAY COIL	B-16	41-1 45-1	Green-Red Green-White	Energizes when puck becomes lodged on one of the puck switches. This relay keeps the score motor from operating continuously. Inoperative in normal play.
A N.C.	H-6	10 38	Red Yellow-Black	Operates circuit to score motor.

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# 10 RELAY BANK SWITCH CHART — CONTINUED

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCH
1-9 RELAY COIL	B-21	53-1 23-4	White-Yellow Blue-Yellow	Energizes when all ten pins are not tripped.
A N.O.	E-22	40-1 21-4	Green Blue-Red	Operates 10-90 relay at 9th position of 1-9 counters.
B N.O.	H-32	13-2 30	Red-Yellow Yellow	Completes circuit to 1-9 units for scoring.
10-90 RELAY COIL	B-22	21-4 23-4	Blue-Red Blue-Yellow	Energizes at 9th position of 1-9 counters.
A N.O.	G-37	51-2 30	White-Red Yellow	Completes circuit to 10-90 units for scoring.
PLAYER UP RESET RELAY COIL	A-7	13 70	Red-Yellow Orange	This relay will either advance or reset the player-up unit.
A S.P.D.T.	C-11	78 51 60	Orange-Black White-Red Brown	When relay is energized, player-up unit reset coil is energized. De-energized it steps player-up unit step-up coil.
B N.O.	D-7	13 38	Red-Yellow Yellow-Black	Lock in switch for this relay.

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## 10 RELAY BANK SWITCH CHART — CONTINUED

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCH
10th FRAME RESET RELAY COIL	A-7	14 70	Red-Green Orange	This relay is used to reset the 10th frame unit.
A	N. C.	90-1P 20-1P	Gray (Plastic) Blue (Plastic)	Breaks circuit to coin relay.
B	N. O.	38 14	Red-Yellow Red-Green	Lock in switch for this relay.
C	N. O.	30 38-7	Yellow Yellow-Black	Completes circuit to player-up unit step-up and reset coils.
D	N. O.	56 36	White-Brown Yellow-Brown	Completes circuit to director unit reset coil thru director unit disc.
E	N. C.	65-4 50-3	Brown-White White	Opens circuit to panel switches.
DOUBLE MARK RELAY COIL	A-25	27-4 70	Blue-Orange Orange	Energized thru hit section of director unit disc.
A	N. O.	54-4 30	White-Green Yellow	Completes circuit to #2 mark transfer trip relay.
B	N. O.	45-4 30	Green-White Yellow	Completes circuit to #1 mark transfer trip relay.
DOUBLE CYCLE RELAY COIL	A-27	36-4 23-4	Yellow-Brown Blue-Yellow	Energized thru miss section of director unit disc, when all ten pins not made on both 1st & 2nd shots following a strike.
A	N. C.	30-1P 60-P	Yellow (Plastic) Brown (Plastic)	Breaks circuit to pin reset motor, and top trip bank reset coil.
B	N. C.	50 51	White White-Red	Breaks circuit to player-up unit step-up coil.
C	N. O.	36-4 38-4	Yellow-Brown Yellow-Black	Completes circuit to count pins trip relay.
D	N. O.	36-4 57-4	Yellow-Brown White-Orange	Lock in switch.
E	S.P.D.T.	93-3 30 10	Gray-Yellow Yellow Red	Breaks circuit to panel switches, and completes circuit to score motor.

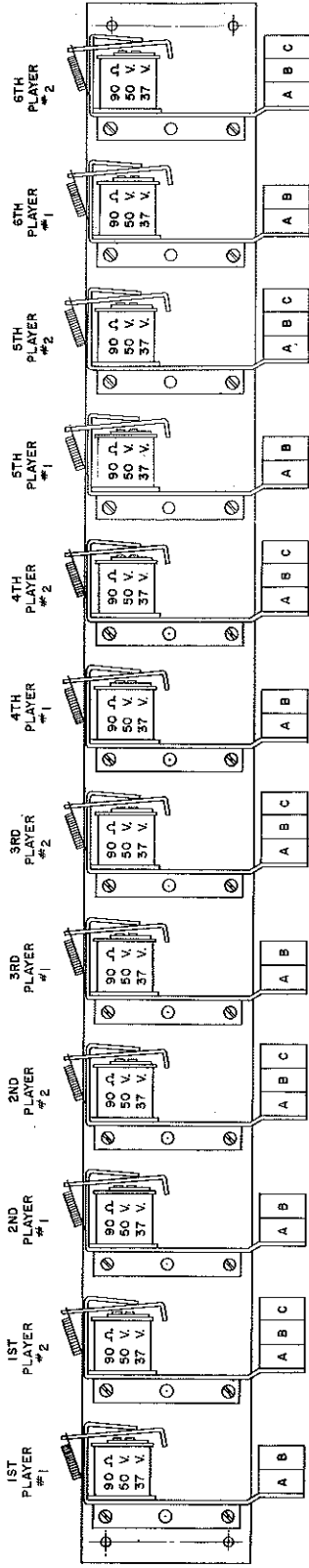
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# 10 RELAY BANK SWITCH CHART — CONCLUDED

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCH
ANTI-CHEAT RELAY COIL	A-15	20-1 70	Blue Orange	Energized by coin relay switch. Its switches protect match circuits, and lite circuits.
A S.P.D.T.	G-15	48-1 30 18-1	Green-Black Yellow Red-Black	Energizes game over relay, if this relay drops out. Also lock in switch for this relay.
B N.O.	K-7	23-5 52-5	Blue-Yellow White-Blue	Breaks match feature lite circuit.
C N.O.	N-30	10-9 74-5	Red Orange-Green	Breaks match feature count circuit.
NUMBER MATCHED RELAY COIL	K-35	93-5 70	Gray-Yellow Orange	Energized thru score motor disc when a number is matched.
A N.O.	F-44	63-2 30	Brown-Yellow Yellow	Completes circuit to chime coil.
B N.O.	D-10	60 30	Brown Yellow	Steps frame unit to lite "match feature" lites.

# (12) PLAYER MARK STORAGE RELAYS PICTORIAL VIEW

## NUMBERS CORRESPOND TO SWITCH CHART



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

ARMATURE PLATE & COIL PART NUMBERS  
 6 #1 MARK STORAGE RELAY ARMATURE PLATES — Z-148-2  
 6 #2 " " " " " " " " " " " " " " — Z-148-1A  
 ALL 90 50V. COILS — C-2794-1

# (12) PLAYER MARK STORAGE RELAYS CHART FOR POSITION OF SWITCHES REFER TO PICTORIAL VIEW

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCH
1st PLAYER MARK STORAGE RELAY #1 COIL	A-31	41-4 70	Green-Red Orange	Energized thru hit section of director unit disc when a spare or double strike is made.
A	N.O.	10-5 41-4	Red Green-Red	Lock-in switch for this relay.
B	N.O.	78-5 30	Orange-Black Yellow	Completes circuit to spare lite or 2nd strike lite when double strike is made.
1st PLAYER MARK STORAGE RELAY #2 COIL	A-31	60-4 70	Brown Orange	Energized thru hit section of director unit disc when a strike or double strike is made.
A	S.P.D.T.	13-8 78-5 14-7	Red-Yellow Orange-Black Red-Green	Directs circuit from spare lite, to 2nd strike lite when double strike is made.
B	N.O.	10-5 60-4	Red Brown	Lock in switch for this relay.
C	N.O.	15-6 30	Red-White Yellow	Completes circuit to 1st strike lite.

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## (12) PLAYER MARK STORAGE RELAYS — CONTINUED

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCH
2nd PLAYER MARK STORAGE RELAY #1 COIL	A-31	52-4 70	White-Blue Orange	Energized thru hit section of director unit disc when a spare or double strike is made.
A N.O.	C-31	14-4 52-4	Red-Green White-Blue	Lock in switch for this relay.
B N.O.	K-16	61-5 30	Brown-Red Yellow	Completes circuit to spare lite or 2nd strike lite when double strike is made.
2nd PLAYER MARK STORAGE RELAY #2 COIL	A-32	57-5 70	White-Orange Orange	Energized thru hit section of director unit disc when a strike or double strike is made.
A S.P.D.T.	L-16	18-7 61-5 21-6	Red-Black Brown-Red Blue-Red	Directs circuit from spare lite, to 2nd strike lite when double strike is made.
B N.O.	C-32	14-4 57-5	Red-Green White-Orange	Lock in switch for this relay.
C N.O.	K-17	23-6 30	Blue-Yellow Yellow	Completes circuit to 1st strike lite.
3rd PLAYER MARK STORAGE RELAY #1 COIL	A-32	33-4 70	Black-Yellow Orange	Energized thru hit section of director unit disc when a spare or double strike is made.
A N.O.	C-32	50-2 83-4	White Black-Yellow	Lock-in switch for this relay.
B N.O.	K-17	41-5 30	Green-Red Yellow	Completes circuit to spare lite or 2nd strike lite when double strike is made.
3rd PLAYER MARK STORAGE RELAY #2 COIL	A-32	15-3 70	Red-White Orange	Energized thru hit section of director unit disc when a strike or double strike is made.
A S.P.D.T.	L-17	25-7 41-5 27-5	Blue-White Green-Red Blue-Orange	Directs circuit from spare lite, to 2nd strike lite when double strike is made.
B N.O.	C-32	15-3 50-2	Red-White White	Lock in switch for this relay.
C N.O.	K-18	36-6 30	Yellow-Brown Yellow	Completes circuit to 1st strike lite.

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# (12) PLAYER MARK STORAGE RELAYS — CONTINUED

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCH
4th PLAYER MARK STORAGE RELAY #1 COIL	A-32	91-4 70	Gray-Red Orange	Energized thru hit section of director unit disc when a spare or double strike is made.
A N.O.	C-32	91-4 18-4	Gray-Red Red-Black	Lock in switch for this relay.
B N.O.	K-19	45-5 30	Green-White Yellow	Completes circuit to spare lite or 2nd strike lite when double strike is made.
4th PLAYER MARK STORAGE RELAY #2 COIL	A-33	31-5 70	Yellow-Red Orange	Energized thru hit section of director unit disc when a strike or double strike is made.
A S.P.D.T.	L-19	38-6 45-5 43-5	Yellow-Black Green-White Green-Yellow	Directs circuit from spare lite, to 2nd strike lite when a double strike is made.
B N.O.	C-33	18-4 31-5	Red-Black Yellow-Red	Lock in switch for this relay.
C N.O.	K-19	48-5 30	Green-Black Yellow	Completes circuit to 1st strike lite.
5th PLAYER MARK STORAGE RELAY #1 COIL	A-33	93-4 70	Gray-Yellow Orange	Energized thru hit section of director unit disc when a spare or double strike is made.
A N.O.	C-33	20-4 93-4	Blue Gray-Yellow	Lock in switch for this relay.
B N.O.	K-20	52-7 30	White-Blue Yellow	Completes circuit to spare lite or 2nd strike lite when double strike is made.

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**(12) PLAYER MARK STORAGE RELAYS — CONCLUDED**

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCH
5th PLAYER MARK STORAGE RELAY #2 COIL	A-33	36-5 70	Yellow-Brown Orange	Energized thru hit section of director unit disc when a strike or double strike is made.
A S.P.D.T.	L-20	50-6 52-7 51-5	White White-Blue White-Red	Directs circuit from spare lite to 2nd strike lite when double strike is made.
B N.O.	C-33	20-4 36-5	Blue Yellow-Brown	Lock in switch for this relay.
C N.O.	K-21	53-5 30	White-Yellow Yellow	Completes circuit to 1st strike lite.
6th PLAYER MARK STORAGE RELAY #1 COIL	A-34	98-4 70	Gray-Black Orange	Energized thru hit section of director unit disc when a spare or double strike is made.
A N.O.	C-34	90-3 89-4	Gray Gray-Black	Lock in switch for this relay.
B N.O.	K-21	60-5 30	Brown Yellow	Completes circuit to spare lite or 2nd strike lite when double strike is made.
6th PLAYER MARK STORAGE RELAY #2 COIL	A-34	40-4 70	Green Orange	Energized thru hit section of director unit disc when a strike or double strike is made.
A S.P.D.T.	L-21	54-5 60-5 56-5	White-Green Brown White-Brown	Directs circuit from spare lite to 2nd strike lite when double strike is made.
B N.O.	C-34	40-4 90-3	Green Gray	Lock in switch for this relay.
C N.O.	K-22	63-5 30	Brown-Yellow Yellow	Completes circuit to 1st strike lite.

# PLAYER MARK DROP OUT RELAY AND PLAYER RESET RELAYS CHART

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCH
PLAYER MARK DROP OUT RELAY COIL	A-35	38-5 70	Yellow-Black Orange	Energized by score motor pulse switch #2A.
L1 N.C.	D-33	20-4 40-3	Blue Green	Breaks circuit to 5th player #1 & #2 mark storage relays.
L2 N.C.	D-34	90-3 40-3	Gray Green	Breaks circuit to 6th player #1 & #2 mark storage relays.
R1 N.C.	D-31	10-5 40-3	Red Green	Breaks circuit to 1st player #1 & #2 mark storage relays.
R2 N.C.	D-32	14-4 40-3	Red-Green Green	Breaks circuit to 2nd player #1 & #2 mark storage relays.
R3 N.C.	D-32	50-2 40-3	White Green	Breaks circuit to 3rd player #1 & #2 mark storage relays.
R4 N.C.	D-33	18-4 40-3	Red-Black Green	Breaks circuit to 4th player #1 & #2 mark storage relays.
1st & 4th PLAYER RESET RELAY COIL	C-33	57-1 56-1	White-Orange White-Brown	Energized thru score motor disc at the start of a new game.
L1 N.O.	C-39	45-2 98-5	Green-White Gray-Black	Resets 1st player 10-90 unit to zero at the start of new game.
L2 N.O.	D-38	81-2 98-5	Black-Red Gray-Black	Resets 1st player 100-300 unit to zero at the start of new game.
L3 N.O.	F-33	15-9 98-5	Red-White Gray-Black	Resets 1st player 1-9 unit to zero at the start of new game.
R1 N.O.	C-39	57-2 83-7	White-Orange Black-Yellow	Resets 4th player 10-90 unit to zero at the start of new game.
R2 N.O.	D-40	21-3 83-7	Blue-Yellow Black-Yellow	Resets 4th player 100-300 unit to zero at the start of new game.
R3 N.O.	H-33	90-2 83-7	Gray Black-Yellow	Resets 4th player 1-9 unit to zero at the start of new game.

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# PLAYER MARK DROP OUT RELAY AND PLAYER RESET RELAYS CHART — CONCLUDED

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCH
2nd & 5th PLAYER RESET RELAY COIL	C-23	60-1 56-1	Brown White-Brown	Energized thru score motor disc at the start of a new game.
L1 N.O.	G-39	52-2 98-5	White-Blue Gray-Black	Resets 2nd player 10-90 unit to zero at the start of new game.
L2 N.O.	D-39	93-2 98-5	Gray-Yellow Gray-Black	Resets 2nd player 100-300 unit to zero at the start of new game.
L3 N.O.	G-33	18-2 98-5	Red-Black Gray-Black	Resets 2nd player 1-9 unit to zero at the start of new game.
R1 N.O.	H-39	80-2 83-7	Black Black-Yellow	Resets 5th player 10-90 unit to zero at the start of new game.
R2 N.O.	D-40	27-3 83-7	Blue-Orange Black-Yellow	Resets 5th player 100-300 unit to zero at the start of new game.
R3 N.O.	H-33	36 83-7	Yellow-Brown Black-Yellow	Resets 5th player 1-9 unit to zero at the start of new game.
3rd & 6th PLAYER RESET RELAY COIL	C-24	61-1 56-1	Brown-Red White-Brown	Energized thru score motor disc at the start of a new game.
L1 N.O.	H-33	23-2 98-5	Blue-Yellow Gray-Black	Resets 3rd player 1-9 unit to zero at the start of new game.
L2 N.O.	D-40	14-3 98-5	Red-Green Gray-Black	Resets 3rd player 100-300 unit to zero at the start of new game.
L3 N.O.	H-40	54-2 98-5	White-Green Gray-Black	Resets 3rd player 10-90 unit to zero at the start of new game.
R1 N.O.	D-41	38-3 83-7	Yellow-Black Black-Yellow	Resets 6th player 100-300 unit to zero at the start of new game.
R2 N.O.	J-40	71-2 83-7	Orange-Red Black-Yellow	Resets 6th player 10-90 unit to zero at the start of new game.
R3 N.O.	I-33	41-9 83-7	Green-Red Black-Yellow	Resets 6th player 1-9 unit to zero at the start of new game.

# MATCH TRIP BANK CHART SWITCHES LISTED ALPHABETICALLY FROM LEFT TO RIGHT

RELAY SWITCH	LOCATION ON DIAGRAM	WIRE No.	WIRE COLORS	FUNCTION OF SWITCH
MATCH BANK RESET COIL 25-A-7	A-13	83 70	Black-Yellow Orange	Energized by Score Motor Pulse Switch #5A.
STAR TRIP RELAY COIL	A-14	15-1 70	Red-White Orange	Energized thru 0-9 match unit.
A N.O.	C-13	85 90	Black-White Gray	Completes circuit to trophy trip relay.
B N.O.	L-11	14-6 52-5	Red-Green White-Blue	Lites star lite.
C N.C.	C-14	15-1 15-1	Red-White Red-White	Breaks circuit to this coil when tripped.
D S.P.D.T.	L-36	81-5 93-5 40-5	Black-Red Gray-Yellow Green	Breaks circuit to "number" matched meter and makes circuit to "number & star" matched meter.
E S.P.D.T.	L-13	20-6 74-4 71-4	Blue Orange-Green Orange-Red	Breaks circuit to "number" matched lite and makes circuit to "number & star" matched lite.
TROPHY TRIP RELAY COIL	A-13	85 70	Black-White Orange	Energized thru 0-9 match unit.
A N.O.	L-12	18-6 52-5	Red-Black White-Blue	Lites trophy lite.
B N.C.	B-13	85 85	Black-White Black-White	Breaks circuit to this coil when tripped.
C S.P.D.T.	M-13	25-5 71-4 74-4	Blue-White Orange-Red Orange-Green	Breaks circuit to "number & star" matched lite and makes circuit to "number, star & trophy" matched lite.
D S.P.D.T.	L-36	75-6 40-5 61-6	Orange-White Green Brown-Red	Breaks circuit to "number & star" matched meter, and makes circuit to "number, star & trophy" matched meter.



# MISCELLANEOUS PARTS

## PART No.

## NAME OF PARTS

A-1625	Armature plate for 30-V-26 pin reset coil
S-1275-38	Bar — Top glass protector
G-245	Back glass (ABC-Bowler)
G-245-1	Back glass (Congress Bowler)
P-1900-22	Cash box (10¢)
P-1900-23	Cash box (10¢ & 25¢)
P-3089-6	Cash box cover (10¢)
P-3089-7	Cash box cover (10¢ & 25¢)
30-V-26	Coil — Pin
E-109-52	Coil — Coin lockout
E-271-9	Coin chutes (10¢)
E-271-10	Coin chutes (25¢)
E-109-105	Condenser (16 MFD) mounting board
E-109-106	Condenser (50 MFD) mounting board
E-130-8	Counter — 48 volt
S-1275-37	Foul line bar
AS-1389-6	Front door complete (10¢)
AS-1389-7	Front door complete (10¢ & 25¢)
CA-745-2	Front door only (10¢)
CA-745-3	Front door only (10¢ & 25¢)
A-254-33	Hinge — front door
A-254-28	Hinge — top panel
CA-461-4	Leg — Right front or left rear
CA-462-5	Leg — Left front or right rear
M-163-4	Leg adjuster
M-281-6	Lock and keys, front door
M-281-9	Lock and keys, top panel and back door
E-119-88	Motor, pin reset motor assembly
E-119-87	Motor, score motor unit
C-340-7	Pin (Specify number 1, 2, etc.)
S-1279-3	Puck
P-3103-1	Puck retriever
C-178-11	Push button (10¢ & 25¢)
R-221-13	Rebound rubber
E-105-81	Resistor (3900 Ohm-1 Watt) Mounting Board
R-221-15	Rubber strip, front of panel
C-316	Score unit wheel
G-246	Switch panel glass
SW-101-7	Switch for C-178-11 push button
E-122-41	Transformer
M-458-4	Window in front of pins