

*Bally*

Manual No. 1800  
Game No. 924  
July 4, 1972

# **DOUBLE-UP**

## **SERVICE & OPERATING INSTRUCTIONS**



*Bally*

**MANUFACTURING CORPORATION**

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# DOUBLE - UP BINGO



## INTRODUCTION

This book has been organized to serve as the complete service & parts guide for the "Double-Up" Bingo Game. Virtually all circuits and functions within the game are completely explained with schematic wiring diagram (#W-826-49) location references.

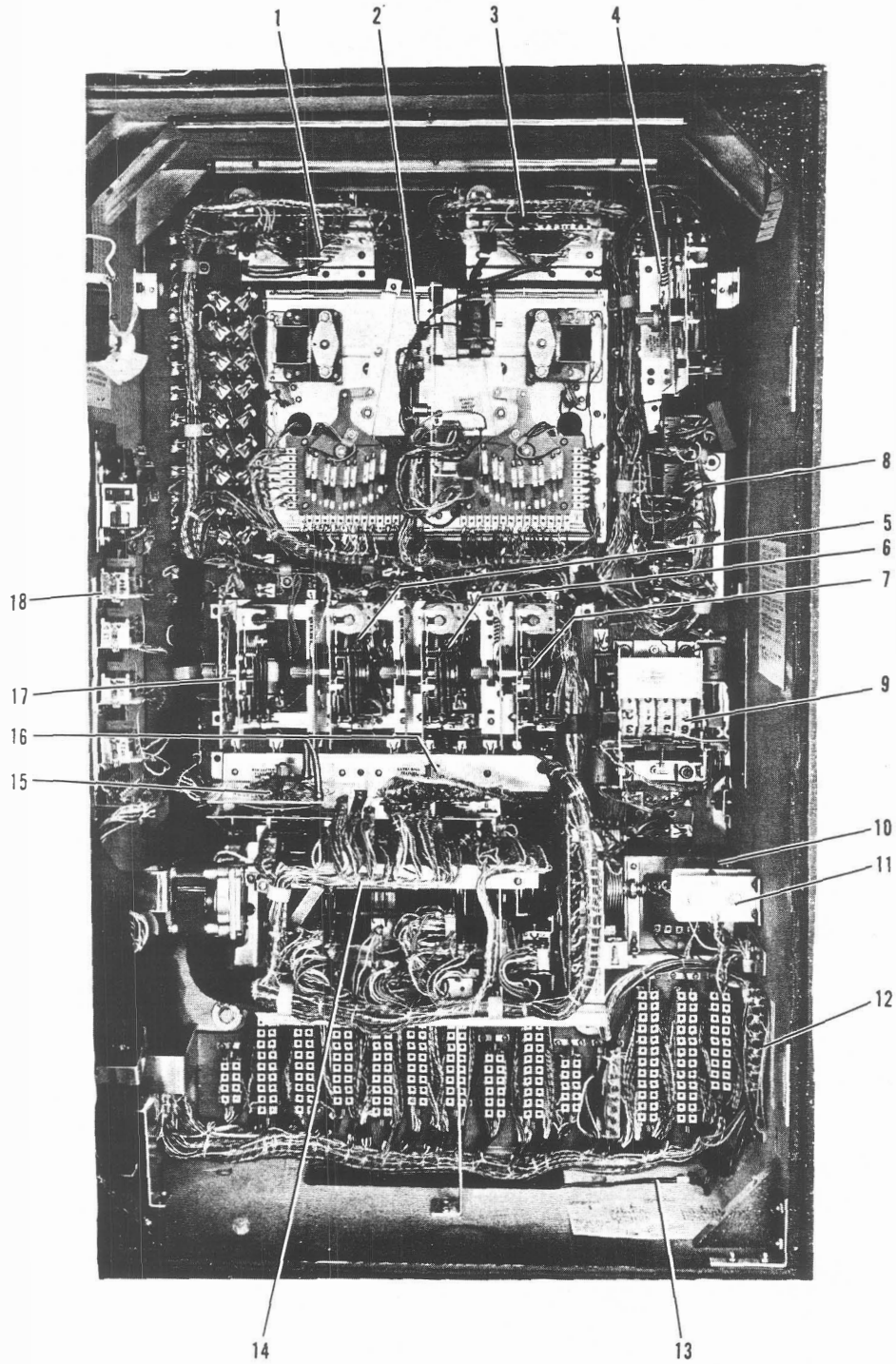
Quick location of all units and corresponding function & part information can be made through the following "Unit Layout & Page Index" section.

WIRE COLOR CODE		
1. . . .	Red	A. First number is wire body color
2. . . .	Blue	
3. . . .	Yellow	
4. . . .	Green	B. Second number is tracer color (stripe)
5. . . .	White	
6. . . .	Brown	
7. . . .	Orange	C. Number after dash indicates re-use of same color wire in a different circuit.
8. . . .	Black	
9. . . .	Gray	
0. . . .	No Tracer	

SWITCH CODE	
N.C. . . .	Normally Closed
N.O. . . .	Normally Open
N.B.B. . .	Make Before Break
T. . . .	Transfer (or Single Pole Double Throw)
Note: All Switches on Bally Diagrams work clockwise.	

SWITCH SYMBOLS		
Normally Open (N.O.)	Normally Closed (N.C.)	Transfer (T.)

# BACK CABINET UNIT LAYOUT & PAGE INDEX



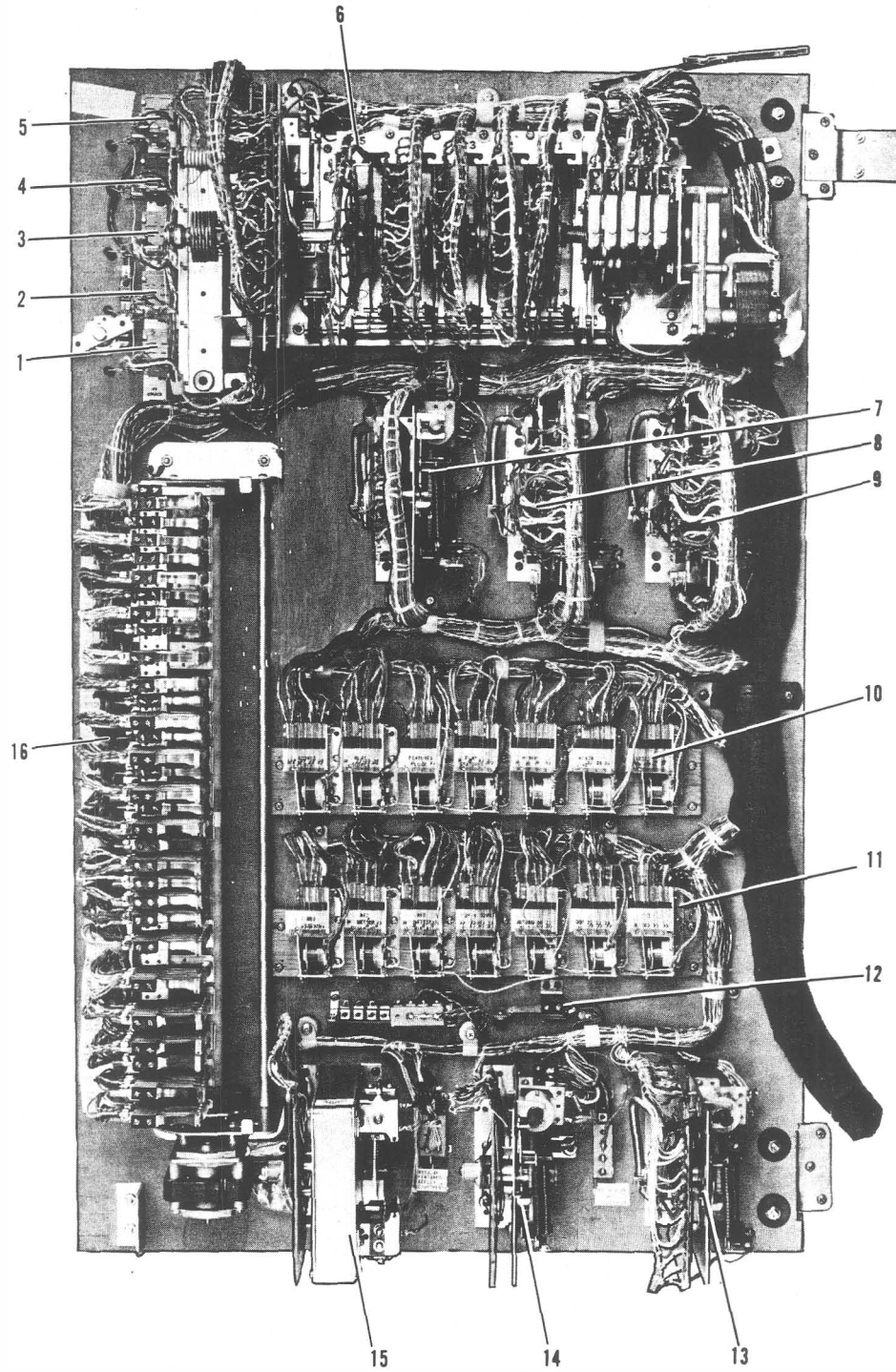
ALWAYS GIVE MODEL AND PART NO. WHEN ORDERING SERVICE PARTS

# BACK CABINET UNIT LAYOUT & PAGE INDEX

Index No.	Part No.	Description	Page No.	Index No.	Part No.	Description	Page No.
		Note: This Photograph shows an interior view of the Back Cabinet & Insert Unit.		11		Rectifier Bridge (No longer used) . . . . .	N/A
1	AS-827-482 ND	Selection Features Unit 24 & 28		12	E-148-9A E-133-10A	Fuse Block . . . . . 10 Amp Fuse (6 Reg'd)	56 56
2	AS-1809-10 ND	Mystic Lines Unit 8, 9 & 46 Mystic Lines Layout . . . 8 Winner Search Positions Chart . . . . . 8 Motor Unit Discs . . . . . 9		13	E-126-63A	Cord Set (3 Lug) . . . . .	56
3	AS-827-491 ND	Mystic Lines Feature Unit . . . . . 24 & 29		14	AS-798-114 ND W-728-9A	Control Unit . . . . . Control Unit Search Disc . . . . . Winner Search Positions Chart . . . . . Replay Scores Chart (C. U. Switches) . . . . .	10-14 10 8 30
4	AS-797-224 ND	Blue Replay Counter Units (Identical to other replay Units except one Coil is turned for accessibility) 24 & 30		15	AS-1022-91 ND	Red Letter Unit . . . . .	25 & 31
5	AS-797-225 ND	Green Replay Counter Unit . . . . . 24 & 30		16	AS-1148-31 ND	Extra Ball Unit . . . . .	25 & 32
6	AS-797-225 ND	Red Replay Counter Unit . . . . . 24 & 30		17	AS-827-484 ND	Multiplier Unit . . . . .	25 & 33
7	AS-797-225 ND	Yellow Replay Counter Unit . . . . . 24 & 30		18	AS-2390-4ND	Auxiliary Board Assembly	41
8	E-300-634B	Back Cabinet Relay Bank - 4 . . . . . 40 Relay Functions (Top - Bottom): . . . . . 40 1 Anti-Cheat . . . . . 40 2 Multiplay (Coinage Option) 40 3 Start . . . . . 40 4 Replay - Reset . . . . . 40			AS-1237-7A AS-2659-88A AS-2659-88A AS-2659-34A AS-2659-34A	All 4 Stars Replay Counter . . . . . X4 Pulse . . . . . X2 Pulse . . . . . 2nd Extra Step . . . . . 1st Extra Step . . . . .	41 41 41 41 41
9	AS-473-54ND	Replay Register Unit . . . . .	25			Note: Also check Miscellaneous Parts Guide for small parts & cabinetry details.	
10	E-122-103B	Transformer . . . . .	1				

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# BACK DOOR UNIT LAYOUT & PAGE INDEX



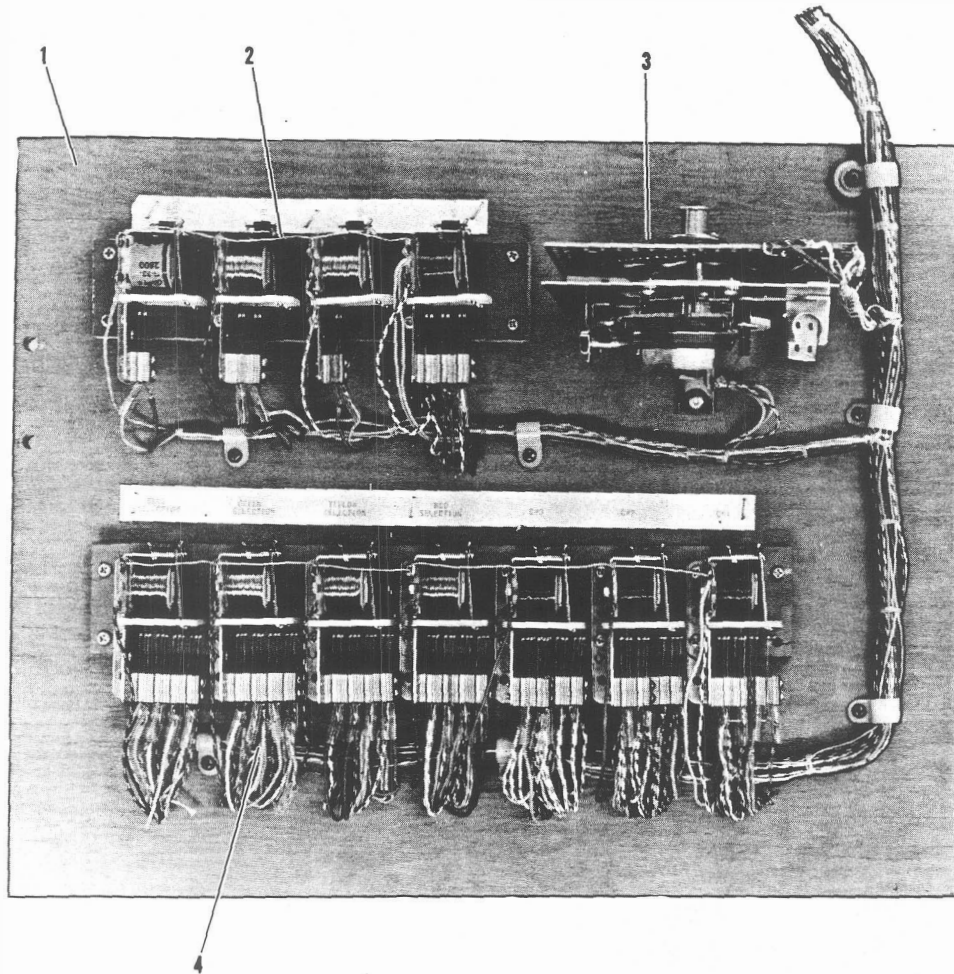
ALWAYS GIVE MODEL AND PART NO. WHEN ORDERING SERVICE PARTS

# BACK DOOR UNIT LAYOUT & PAGE INDEX

Index No.	Part No.	Description	Page No.	Index No.	Part No.	Description	Page No.
		Note: This Photograph shows an interior view of Back Door Assembly.			4	Cam #7 . . . . .	44-45
					5	X4 Win (Feature Game)	45
					6	X2 Win (Feature Game)	45
					7	X1/2 Win (Feature Game)	45
		Note: Index No. 's 1-5 are component parts of the Search Relay Bank Assembly, #E-300-632B.		12	AS-982-61A	Tilt Switch & Bracket	
1		#5 Search Relay . . . . .	46	13	AS-1022-136ND	Double Feature Unit	26 & 37
2		#4 Search Relay . . . . .	46	14	AS-1110-48ND	Timer Unit . . . . .	26 & 38
3		#3 Search Relay . . . . .	46	15	AS-873-47ND	Reflex Unit . . . . .	27
4		#2 Search Relay . . . . .	46	16	AS-2409-22ND	Trip Relay Bank (18)	18-23
5		#1 Search Relay . . . . .	46			Relay List ( Top to Bottom):	
6	AS-1020-60ND	Mixer & Spotting Unit Assembly . . . . .	15 - 17	1		All 4 Stars - 600 Win Fea. . . . .	18
	W-850-33C	Spotting Unit Disc . . . . .	15	2		All 4 Stars - 300 Win Fea.	19
7	AS-1022-135ND	Yellow Score Unit . . . . .	25 & 34	3		Any 3 Stars (Red Letter) Fea. . . . .	19
8	AS-1022-104 ND	Red Score Unit . . . . .	26 & 35	4		Any 2 Stars (Red Letter) Feature . . . . .	19
9	AS-1022-105ND	Blue & Green Score Unit	26&36	5		Green Double Fea. . . . .	19
10	E-300-641B	Back Door 7 Relay Bank - Top . . . . .	42 - 43	6		Yellow Double Fea. . . . .	20
		Relay List (L - R):		7		Blue Double Fea. . . . .	20
	1	Scores Lock . . . . .	42	8		Red Double Fea. . . . .	20
	2	Play Scores . . . . .	42	9		Tilt . . . . .	20-21
	3	Feature Lock . . . . .	42	10		Extra Ball #1 . . . . .	21
	4	Play Feature . . . . .	42-43	11		Extra Ball #2 . . . . .	21
	5	Mixer #4 . . . . .	43	12		Red Roll-Over Button Fea. . . . .	21-22
	6	Mixer #2 . . . . .	43	13		Yellow Roll-Over Button Feature . . . . .	22
	7	Mixer Cam #3 . . . . .	43	14		Select Before 2nd Ball (Mystic Lines) Fea. . . . .	22
11	E-300-633B	Back Door 7 Relay Bank - Bottom . . . . .	44-45	15		Select Before 3rd Ball (Mystic Lines) Fea. . . . .	22
		Relay List (L - R):		16		Select Before 4th Ball (Mystic Lines) Fea. . . . .	22-23
	1	Red Button . . . . .	44	17		Select Before 5th Ball (Mystic Lines) Fea. . . . .	23
	2	Red Letter #2 . . . . .	44	18		Select After 5th Ball (Mystic Lines) Fea. . . . .	23
	3	Red Letter #1 . . . . .	44				

**ALWAYS GIVE MODEL AND PART NO. WHEN ORDERING SERVICE PARTS**

# CONTROL BOARD LAYOUT & PAGE INDEX



ALWAYS GIVE MODEL AND PART NO. WHEN ORDERING SERVICE PARTS

# CONTROL BOARD LAYOUT & PAGE INDEX

Index No.	Part No.	Description	Page No.	Index No.	Part No.	Description	Page No.
		This Photograph shows the Feature Game (1/2X, 1X, 2X & 4X) Control Board. This unit is located in the lower front cabinet & is accessible thru the keyed side door.		3	AS-827-481ND	Double Feature, 2 X, 4X Unit . . . . .	27
					W-1086-5B	Double Feature, 2X, 4X Disc . . . . .	39
1	AS-2216-114ND	Control Board (complete) . . . . .	39, 52-54	4	E-300-640B	Relay Bank (7) . . . . .	52-53
						Relay Functions (L - R):	
					1	Blue Selection . . . . .	52
					2	Green Selection . . . . .	52
					3	Yellow Selection . . . . .	52
					4	Red Selection . . . . .	52-53
					5	C. #3 . . . . .	53
					6	C. #2 . . . . .	53
					7	C. #1 . . . . .	53
2	E-300-635B	Relay Bank (4) . . . . .	54				
		Relay Function(L - R):					
	1	Step Control . . . . .	54				
	2	P. #1 . . . . .	54				
	3	P. #2 . . . . .	54				
	4	P. #3 . . . . .	54				

## FRONT CABINET UNITS

A.	E-300-637B	Relay Unit (2) . . . . .	48	C.	AS-2517-12A	Coin Defector (Front Door) . . . . .	27
		Ball Detector . . . . .	48				
		"R" Button . . . . .	48	D.		Ball Count Trough Sw.'s	48
B.	AS-1358-22ND	Coin Unit Stepper (Cash Divider) . . . . .	27	E.	AS-1139-28 ND	Ball Lifter Motor Unit	49
				F.		Kumbac Key Meter Unit	49

## CONTROL BUTTONS

A.	"A, B, C" Buttons (Mystic Lines) . . . . .	47	E.	Yellow Button (Extra Balls) . . . . .	47
B.	Selector Button (Feature Game) . . . . .	47	F.	Red Button (Fea. & Scores - Start Game) . . . . .	47
C.	"R" Button (Red Letter & Collect) . . . . .	47	G.	Green Button (Features Step) . . . . .	47
D.	Manual Ball Lift Button (On ball shooter unit) . . . . .	47	H.	Blue Button (Scores & Feature Game) . . . . .	47

## PLAYFIELD PANEL

A.	Panel Switches . . . . .	50	E.	AS-982-363	Switch Unit (Shutter Motor Cam 6x) . . . . .	51
B.	AS-982-704A	Shutter Panel Switches . . . . .	50			
C.	AS-2662-60A	Lifter Start Relay . . . . .	50			
D.	AS-232-85B	Shutter Motor Assembly	50-51			

Note: For all other Panel Units refer to the Miscellaneous Parts List.

## PARTS GUIDE

Motor Parts Guide . . . . . 54-55

Miscellaneous Parts Guide . . . . . 56-57



# MYSTIC LINES LAYOUT

## CONTROL UNIT

WINNER SEARCH POS. CHART					
Red Wiper at Position	Wiper Search Relay # 1	Wiper Search Relay # 2	Wiper Search Relay # 3	Wiper Search Relay # 4	Wiper Search Relay # 5
1					
2					
3					
4	R5	G5			
5					
6	Y5	G5			
7					
8	Y5	R5	G5		
9					
10	B5	G5	Y5		
11					
12	B5	R5	G5		
13					
14	B5	Y5	R5		
15					
16	B5	Y5	R5	G5	
17					
18	G2	G3	G4		
19					
20	G1	G3	G4		
21					
22	G1	G2	G4		
23					
24	G1	G2	G3	G4	G5
25					
26	B2	B3	B4		
27					
28	B1	B3	B4		
29					
30	B1	B2	B4		
31					
32	B1	B2	B3	B4	B5
33					
34	R2	R3	R4		
35					
36	R1	R3	R4		
37					
38	R1	R2	R4		
39					
40	R1	R2	R3	R4	R5
41					
42	Y2	Y3	Y4		
43					
44	Y1	Y3	Y4		
45					
46	Y1	Y2	Y4		
47					
48	Y1	Y2	Y3	Y4	Y5
49					
50					

2 Star - 3 Star  
Red Letter  
Game Winners

All 4 Star  
300 - 600  
Winners

Green Zone  
Winners

Blue Zone  
Winners

Red Zone  
Winners

Yellow Zone  
Winners

BINGO WINNERS READ ACROSS

## MYSTIC LINES CHART REFERENCE

Y1	R1	G1	G2	G5
B1	Y2	R2	R5	G3
B2	Y5	Y3	R3	G4
B5	B3	B4	Y4	R4

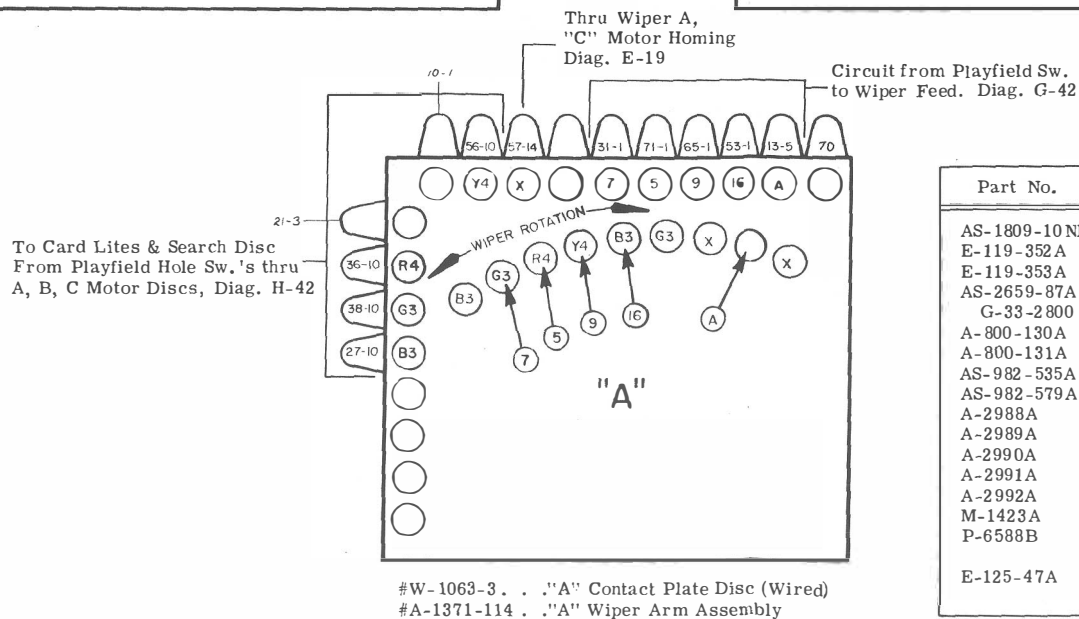
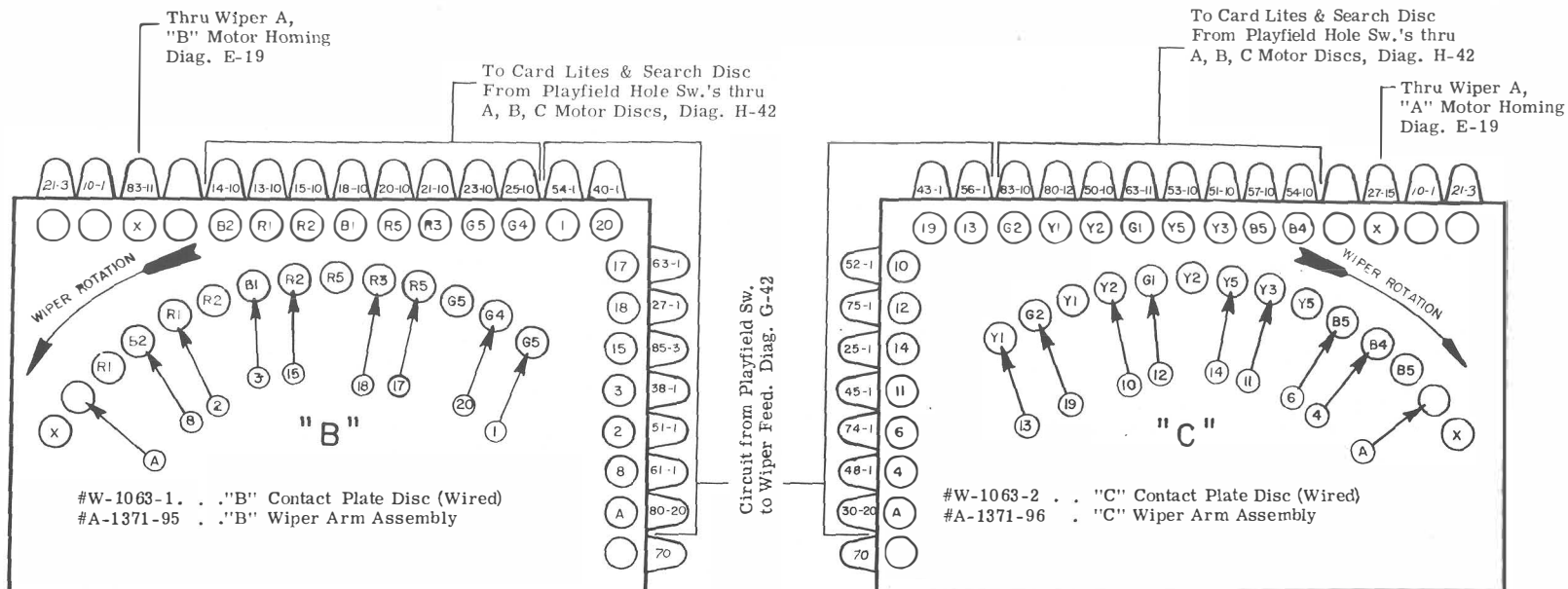
## MYSTIC LINES NUMERICAL REF. (INDEXED POSITION)

18	4	7	9	17
11	8	12	6	13
15	1	20	2	19
16	14	5	3	10

# MYSTIC LINES MOTOR UNIT DISCS

VIEWED FROM WIRING SIDE

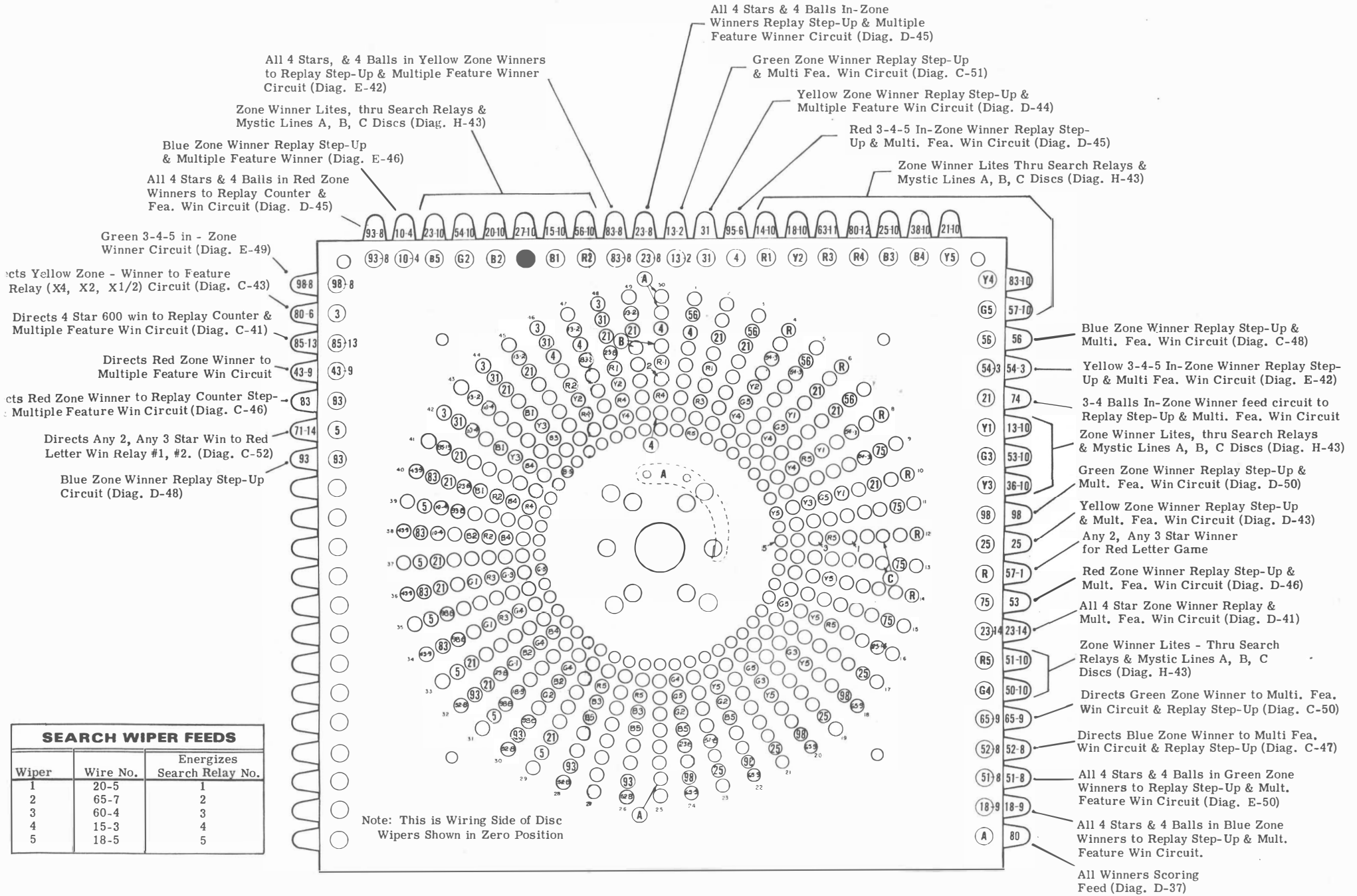
Wipers shown in zero position



## PARTS BREAKDOWN

Part No.	Description
AS-1809-10ND	Mystic Lines Unit (Complete)
E-119-352A	Motor 25 R. P. M. ("A" Line)
E-119-353A	Motor 45 R. P. M. ("B" & "C" Lines)
AS-2659-87A	"B" & "C" Cam Relays (2 Req'd)
G-33-2800	Relay Coil
A-800-130A	"A" Line Cam & Hub Assembly
A-800-131A	"B" & "C" Line Cam & Hub Assy.
AS-982-535A	"A" Line Switch & Brkt. Assy.
AS-982-579A	"B" & "C" Line Sw. & Brkt. Assy.
A-2988A	1st Row Mystic Line Slot Assy.
A-2989A	2nd Row Mystic Line Slot Assy.
A-2990A	3rd Row Mystic Line Slot Assy.
A-2991A	4th Row Mystic Line Slot Assy.
A-2992A	5th Row Mystic Line Slot Assy.
M-1423A	Clear Plastic "Card Overlay
P-6588B	Front Plate (Red, Blue, Yellow, Green & Stars Plan)
E-125-47A	Light Bulb #1464 (20 Req'd)

# CONTROL UNIT SEARCH DISC



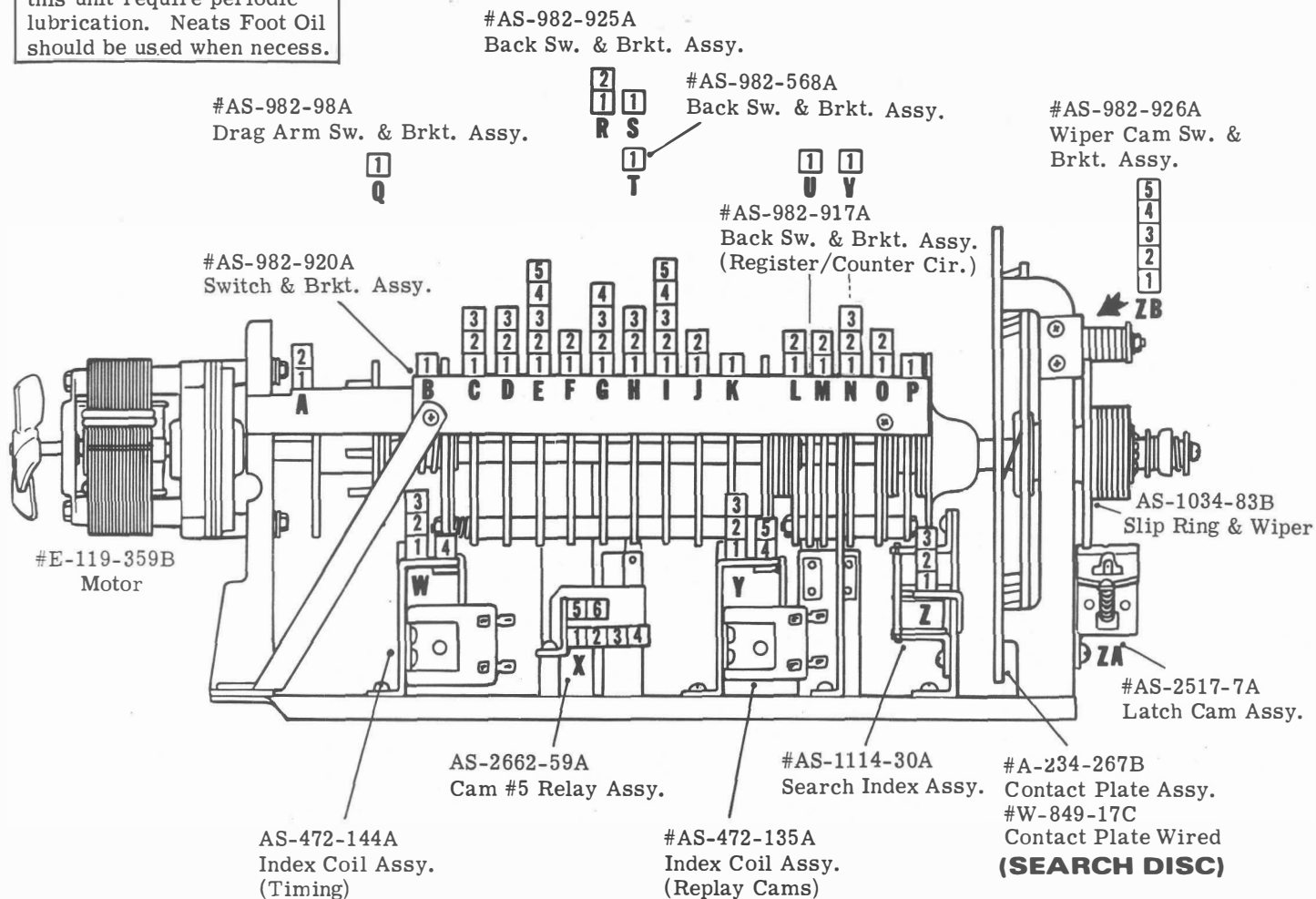
## SEARCH WIPER FEEDS

Wiper	Wire No.	Energizes Search Relay No.
1	20-5	1
2	65-7	2
3	60-4	3
4	15-3	4
5	18-5	5

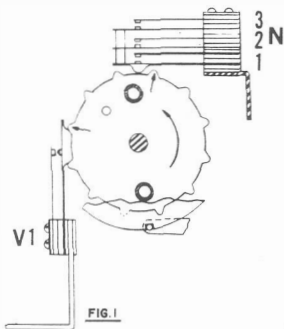
# CONTROL UNIT

Control Unit (#AS-798-114ND) Pictorial View

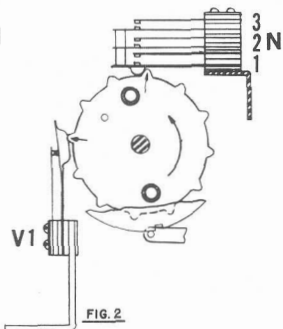
Leather Clutch Washers on this unit require periodic lubrication. Neats Foot Oil should be used when necess.



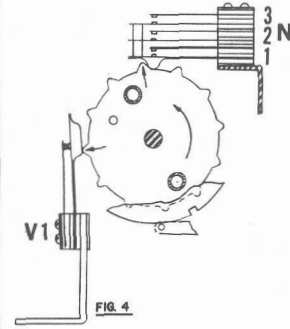
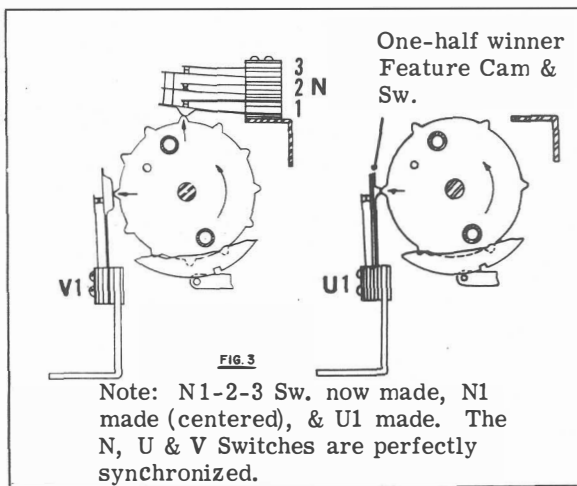
Correct adjustment & synchronization of the N, V & U Switches is vitally important to the Replay Counter Circuit. Out of adjustment U & V Switches can cause the 4 Replay Counter Discs (printed circuit) to become overloaded and burn out. Figure No. 3 shows the U, V (#AS-982-917A, Switches), & N Switches in a proper "Made" position, the U & V Units are adjustable for proper operation. Note that V1 Switch closes first & opens last.



Replay Cams shown in their norm. indexed pos. Switches N-1-2-3 are open.



Cams now starting to rotate. Sw. out of indexed pos. - Sw. N1-2-3 open, Sw. V1 made.



Switches N1-2-3 & U1 are now open, V1 is still made. After this cycle Cams & Switches return to Fig. 1 position.

# CONTROL UNIT FUNCTION CHART

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
Motor	E-119-359B	E-1	60P 50P	Brown White	Operates Unit thru Replay Reset Re. & Timer Cam Index #16A
A1 N.O.	ASW-C2-3A	E-9	65-2 36-9	Brown-White Yellow-Brown	Completes select before 5th ball timer unit step-up
A2 N.C.	ASW-C1-25A	A-6	85-1 45-18	Black-White Green-White	Opens circuit to Mixer Latch Relay
B1 N.C.	ASW-C2-28	F-8	30 25-9	Yellow Blue-White	Completes circuit to Multi-play Relay when coining game (optional).
C1 N.C.	ASW-C1-3	G-4	30 48-2	Yellow Green-Black	Opens entire game start circuit
C2 T.	ASW-C3-3	C-55	60-13 57-13 21-3	Brown White-Orange Blue-Red	Directs circuit from Blue Button to Play Scores Relay
C3 T.	ASW-C3-3	C-54	74-16 81-13 21-3	Orange-Green Black-Red Blue-Red	Directs circuit from Green Button to Play Features Relay
D1 N.O.	ASW-C1-3	D-67	30 98-1	Yellow Grey-Black	Completes circuit to Spotting Cams Index Relay
D2 N.O.	ASW-C1-8	C-5	27-9 80-2	Blue-Orange Black	Completes circuit to Coin Unit Step-Up Coil & Coin Meter Coil
D3 T.	ASW-C3-3	D-5	14-5 13-9 10-5	Red Green Red-Yellow Red	Directs coin switch circuit to Tilt Trip Coil
E1 N.O.	ASW-C1-3	A-25	27-20 23-7	Blue-Orange Blue-Yellow	Completes circuit to Extra Ball Unit Step-Up Coil
E-2 N.O.	ASW-C1-8	C-26	78-4 91-6	Orange-Black Grey-Red	Energizes the anti-cheat relay
E-3 N.O.	ASW-C1-8	C-29	85-4 10-7	Black-White Red	Completes circuit to mystic lines unit disc Mystic Lines Unit Disc
E4 N.O.	ASW-C1-8	A-33	21-3 50-3	Blue-Red White	Energizes Cam #5 Relay
E5 N.C.	ASW-C2-4	F-54	21-3 40-15	Blue-Red Green	Opens circuit to Feature Lock Relay & Scores Lock Relay
F1 N.C.	ASW-C1-4	D-30	40-4 18-16	Green Red-Black	Opens entire feature circuit
F2 N.C.	ASW-C1-8	E-26	51-5 45-2	White-Red Green-White	Opens Extra Ball Step-Up Circuit
G1 N.O.	ASW-C1-3	C-56	54-12 10-17	White-Green Red	Completes circuit to Red, Yellow Blue & Green Score Step-Up
G2 N.O.	ASW-C1-8	F-58	81-11 63-4	Black-Red Brown-Yellow	Completes circuit to the Red Yellow, Blue & Green Score Step-Up (Spotting Disc)
G3 N.O.	ASW-C1-8	F-35	21-3 56-16	Blue-Red White-Brown	Completes circuit to P-3 Relay (New Feature Game)
G4 N.O. Resistor 90-5 & 30	ASW-C1-8	E-3	30 90-5	Yellow Grey	Completes circuit to Cam #7 Relay & Reflex Play Magnet
H1 N.O.	ASW-C1-3	B-25	27-20 25-4	Blue-Orange Blue-White	Steps-Up Extra Ball Unit
H2 N.O.	ASW-C1-8	E-56	51-6 13-13	White-Red Red-Yellow	Completes Circuit to Mixer #3 Disc (Score Step-Up)
H3 N.O.	ASW-C1-8	C-56	54-12 20-6	White-Green Blue	Completes circuit to the Red, Yellow Blue & Green Score Step-Up when operating Red or Blue Button
I1 N.O.	ASW-C1-4	D-27	18-2 36-19	Red-Black Yellow-Brown	Completes circuit to the extra Ball Step-Up
I2 N.O.	ASW-C1-8	A-33	52-11 70	White-Blue Orange	Energizes the All 4 300/600 Circuit to Spotting Disc

# CONTROL UNIT FUNCTION CHART

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function	
I3	N.O.	ASW-C1-8	B-32	61-10 41-5	Brown-Red Green-Red	Energizes Any 2 Trip Circuit (Red Letter)
I4	N.O.	ASW-C1-8	D-30	50-5 90-15	White Grey	Energizes the Double Feature game circuit
I5	T.	ASW-C3-3	B-21	63-9 71-10 58-2	Brown-Yellow Orange-Red	Directs circuit to Blue or Green Double Score on Feature Game
J1	N.O.	ASW-C1-3	D-58	83-4 58-10	Black-Yellow White-Black	Energizes Red Score Step-Up
J2	N.O.	ASW-C1-8	A-66	15-16 45-16	Red-White Green-White	Energizes 2 Extra Step Re. (Blue & Green Score)
K1	N.O.	ASW-C1-4	F-39	21-3 36-13	Blue-Red Yellow-Brown	Completes circuit to Multiplay Relay (Optional Coinage)
L1	N.O.	ASW-C1-4	B-44	63 90-1	Brown-Yellow Grey	Completes Score Discs Circuit to Double Feature Win Relays (X2 & X4)
L2	N.O.	ASW-C1-8	B-41	27-17 23-17	Blue-Orange Blue-Yellow	Complete Circuit to all 4-600 Replay Counter
M1	N.O.	ASW-C1-3	B-44	57 90-1	White-Orange Grey	Completes Score Discs Circuit to Double Feature Win Relays (X2 & X4)
M2	Extra Sw.					
N1	N.O.	ASW-C1-3	B-44	45 90-1	Green-White Grey	Completes Score Discs Circuit to Double Feature Win Relays (X2 & X4)
N2	N.O.	ASW-C1-8	C-38	41-14 63-14	Green-Red Brown-Yellow	Completes Win (X1/2) to Replay Register Step-Up
N3	N.O.	ASW-C1-8	Extra Sw.	27-17	Blue-Orange	
O1	N.O.	ASW-C1-3	B-44	52 90-1	White-Blue Grey	Completes Score Discs Circuit to Double Feature Win Relays (X2 & X4)
O2	N.O.	ASW-C1-9	C-41	10-16 27-17	Red Blue-Orange	Completes Circuit to all 4-600 Replay Counter Coil
P1	N.C.	ASW-C1-4	F-42	74 31-11	Orange-Green Yellow-Red	Opens initial Yellow, Red, Blue Green & Star Winner Search Circuit
Q1	N.O.	ASW-A1-53	E-9	36-9 85-8	Yellow-Brown Black-White	Energizes Timer Unit Step-Up
R1	N.O.	ASW-C1-3	E-56	25-16 51-6	Blue-White White-Red	Completes 2 extra steps to Yellow Score Disc thru Mixer #3 Disc
R2	N.O.	ASW-C1-9	E-56	60-18 51-6	Brown White-Red	Completes 1 extra step to Yellow Score Disc thru Mixer #3 Disc
S1	N.O.	ASW-C1-3	E-55	25-16 51-6	Blue-White White-Red	Completes 2 extra steps to Yellow Score Disc thru Mixer #3 Disc
T1	N.O.	ASW-C1-10	B-19	21-3 18-19	Blue-Red Red-Black	Completes Circuit to Mixer Cam #2 Relay
U1	N.O.	ASW-C1-46	C-38	61-18 41-14	Brown-Red Green-Red	Completes circuit from 1/2 Win Feature Relay to Replay Register Step-Up
V1	N.O.	ASW-C1 X-9	E-37	21-3 23-13	Blue-Red Blue-Yellow	Completes all Replay Winner Circuits to Search Index Coil
TIMING CAM INDEX COIL	BF-27-1250	A-7	70 45-18	Orange Green-White	Energizes timer Cams Index Coil thru Start Relay	
W1	N.O.	ASW-A1-43	G-1	20P 60P	Blue Brown	Energizes Control Unit Motor & Mixer Unit Motor
W2	N.C.	ASW-A2-18	D-12	30 10-2	Yellow Red	Opens Circuit to Red & Yellow Buttons

# CONTROL UNIT FUNCTION CHART

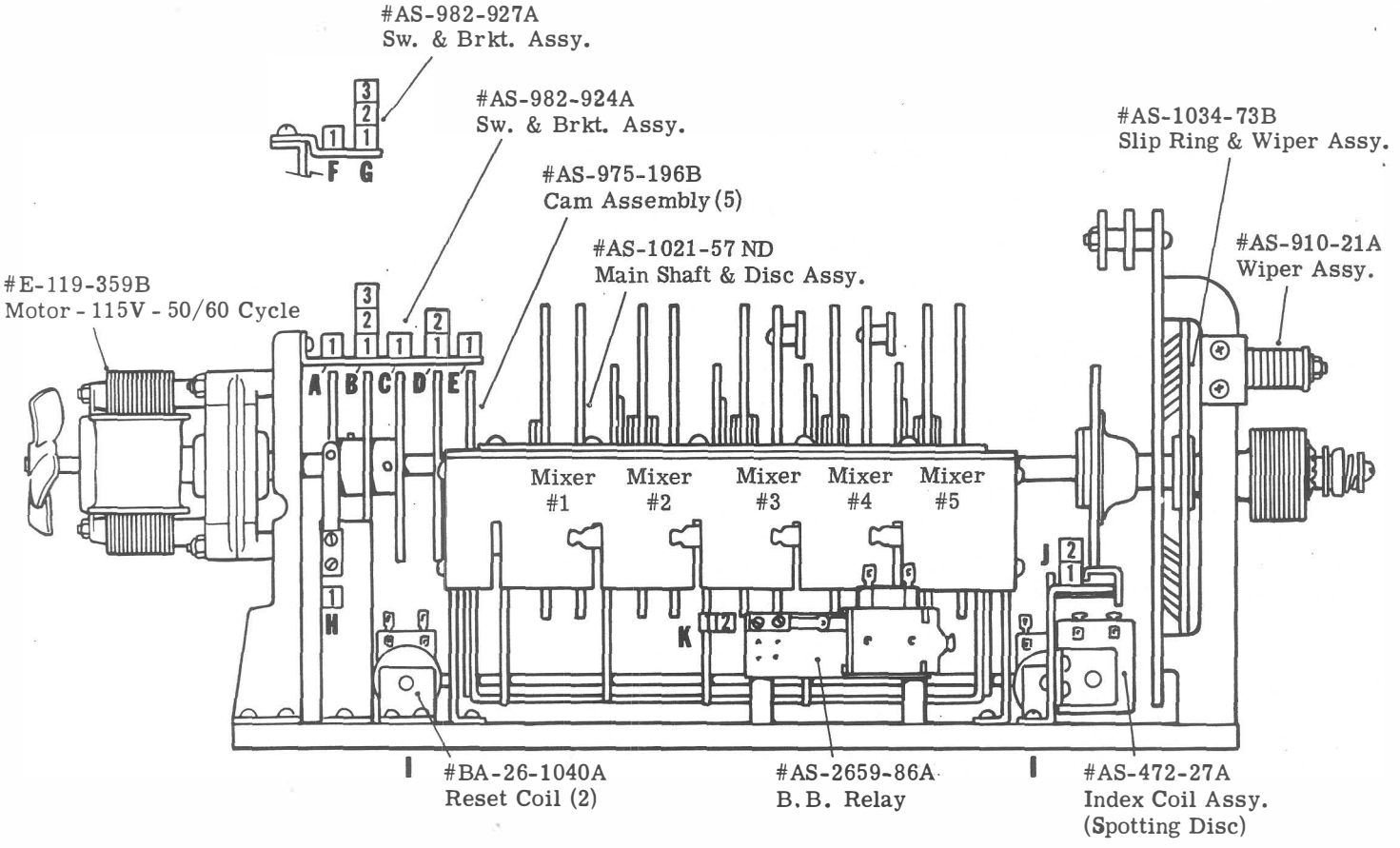
Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
W3 N.C.	ASW-A2-35	E-5	91-13 27-9	Grey-Red Blue-Orange	De-energizes Coin Lockout Coil
W4 N.O.	ASW-A1-56	C-66	57-4 21-3	White-Orange Blue-Red	Energizes the 2 Extra Step Relay Circuit to Score Disc's Step-Up
#5 CAM RELAY COIL	G-31-1800	A-33	70 50-3	Orange White	Energizes #5 Cam Relay thru Control Unit Cam 5D
X1 N.O.	ASW-R1-3	E-10	65-2 83-1	Brown-White Black-Yellow	Completes circuit to Timer Unit Unit Reset
X2 N.O.	ASW-R1-3	F-28	21-3 53-16	Blue-Red White-Yellow	Completes circuit to double Feature Unit Disc & Step-Up thru play Feature Relay
X2 N.O.	ASW-R1-3	F-28	21-3 53-16	Blue-Red White-Yellow	Completes circuit to Double Feature Unit Disc & Step-Up thru Play Feature Relay
X3 N.C.	ASW-R2-4	B-19	21-3 18-7	Blue-Red Red-Black	De-energizes Mixer #4 Relay
X4 N.C.	ASW-R2-4	D-23	21-3 13-3	Blue-Red Red-Yellow	De-energizes Mixer #2 Relay
X5 N.C.	ASW-R2-4	E-35	21-3 60-7	Blue-Red Brown	De-energizes P3 Relay (Feature)
X6 N.C.	ASW-R2-4	C-66	57-4 36-16	White-Orange Yellow-Brown	De-energizes the 2 Extra Step Step Relay (Score Discs)
REPLAY CAM INDEX COIL	CF-28-1025	A-37	70 40-19	Orange Green	Energizes Search Index Coil thru Replay Winner Search Index Circuit
Y1 N.O.	ASW-A1-11	D-37	23-13 80	Blue-Yellow Black	Completes Winner Search Index Circuit
Y2 N.O.	ASW-A1-54	F-43	31-11 74	Yellow-Red Orange-Green	Completes Yellow, Red, Blue, Green & 4 Star Winner Circuit
Y3 N.C.	ASW-A2-271	B-37	15-2 13-6	Red-White Red-Yellow	Opens circuit to Search Index Coil
Y4 N.O.	ASW-A1-56	C-38	81-10 80	Black-Red Black	Completes winner circuit to Replay Reg. Step-Up Replay Meter & Reflex Replay Magnet
Resistor 80 to Search Index 80 (10 W.)					
Y5 N.C.	ASW-A2-29	D-9	85-8 78-6	Black-White Orange-Black	Opens circuit to Timer Unit Step-Up
SEARCH INDEX COIL	EA-29-950	A-37	15-2 70	Red-White Orange	Energized by Winner Search Circuit & Stops Search Wipers to Score Winners
Z1 N.O.	ASW-A2-28	C-36	60 40-19	Brown Green	Completes replay winner circuit to Replay Cam Index
Z2 N.C.	ASW-A1-55	C-4	61-8 53-13	Brown-Red White-Yellow	De-energizes Start Relay
Z3	Lug Connection to "V" Switch				
LATCH CAM COIL ZA	FD-30-1300	A-17	70 23-16	Orange Blue-Yellow	Energized thru "R" Button
ZB1 N.C.	ASW-C1-16	D-17	14-4 57-12	Red-Green White-Orange	Opens circuit to Mystic Lines "A", "B" & "C" Buttons
ZB2 N.C.	ASW-C1-17	B-4	53-13 13-16	White-Yellow Red-Yellow	De-energizes Start Relay
ZB3 N.C.	ASW-C1-17	A-17	52-9 23-16	White-Blue Blue-Yellow	De-energizes Search Wiper Lock Magnet
ZB4 N.C.	ASW-C1-17	C-41	38-20 43-15	Yellow-Black Green-Yellow	Completes circuit to feature game (2 X & 4X) Winner Replay Step-Up
ZB5 N.O.	ASW-C2-7	A-39	41-14 61-14	Green-Red Brown-Red	Completes 1/2 Feature Win Circuit to Reflex Replay Magnet





# MIXER & SPOTTING UNIT

Leather Clutch Washers on this unit require periodic lubrication. Neats Foot Oil should be used when necessary.



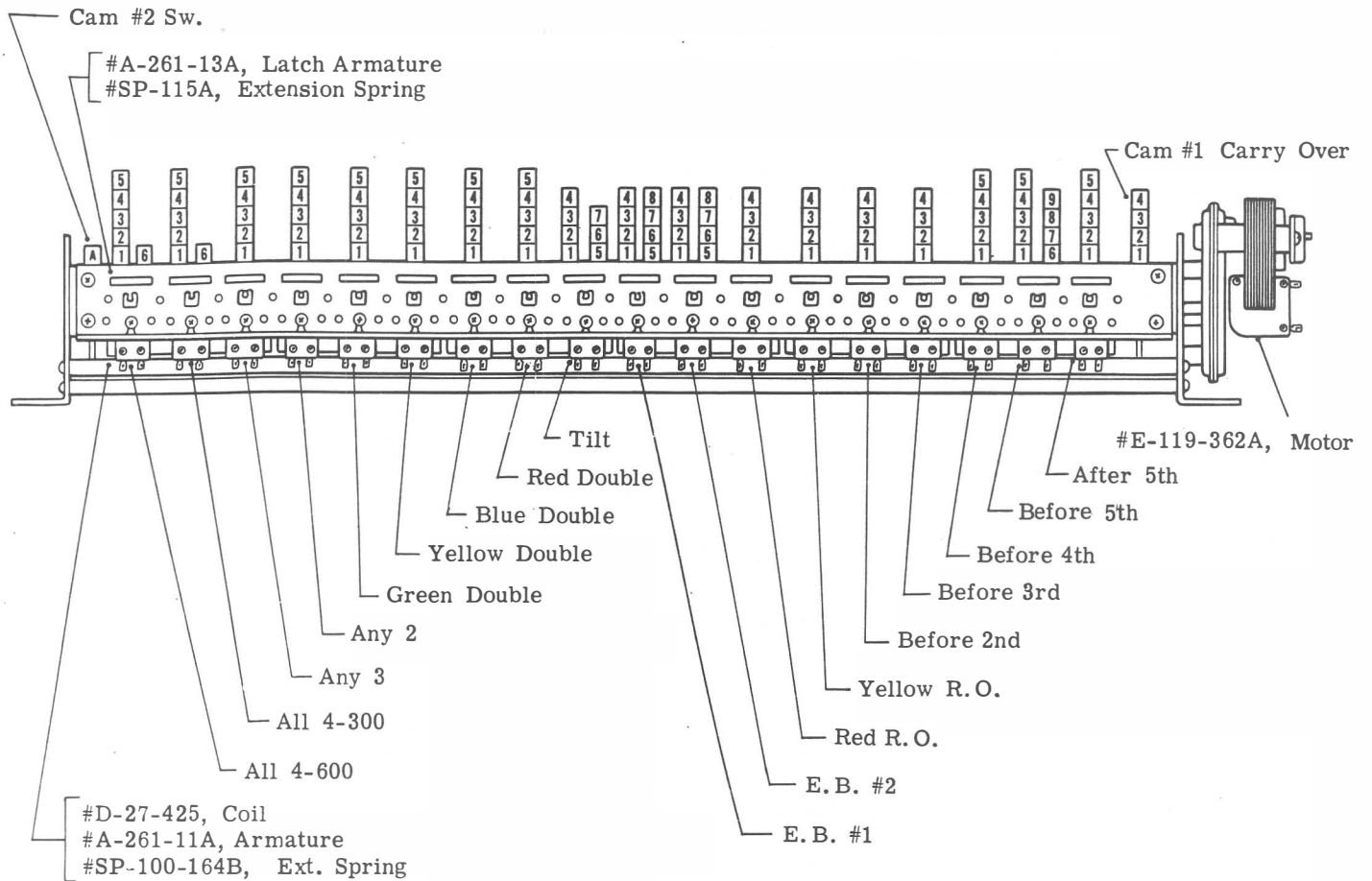
#W-850-33C . . . . . Spotting Disc (Wired)

- |                      |                               |                      |                               |
|----------------------|-------------------------------|----------------------|-------------------------------|
| #W-1065-8B . . . . . | #1 Mixer Disc (Wired)         | #W-1059-7A . . . . . | #3 Index & Wiper Disc (Wired) |
| #W-1065-7A . . . . . | #1 Index & Wiper Disc (Wired) | #W-872-4B . . . . .  | #4 Mixer Disc (Wired)         |
| #W-871-6B . . . . .  | #2 Mixer Disc (Wired)         | #W-872-3A . . . . .  | #4 Index & Wiper Disc (Wired) |
| #W-1058-6A . . . . . | #2 Index & Wiper Disc (Wired) | #W-1076-7B . . . . . | #5 Mixer Disc (Wired)         |
| #W-1059-8B . . . . . | #3 Mixer Disc (Wired)         | #W-1076-8A . . . . . | #5 Index & Wiper Disc (Wired) |

# MIXER & SPOTTING UNIT

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
MOTOR	E-119-359B	E-2	50P 60P	White Brown	Operated thru Replay Reset Re.
A-1 N.O.	ASW-C1-15A	C-16	74-10 71-9	Orange-Green Orange-Red	Completes Mystic Lines Feature Circuit to Step Control Relay
B-1 N.O.	ASW-C1X-1A	C-3	75-2 53-7	Orange-White White-Yellow	Completes Game Start Circuit to <u>Replay Register Reset</u>
B-2 N.O.	ASW-C1X-2A	A-24	78 27-20	Orange-Black Blue-Orange	Completes circuit for an Extra Ball Step-Up
B-3 N.O.	ASW-C1X-2A	C-41	30 38-20	Yellow Yellow-Black	Completes circuit to Multi-Fea. Win & All 4 Star Relay Counter
C-1 N.O.	ASW-C1-21A	A-19	18-19 93-11	Red-Black Grey-Yellow	Completes circuit to Mixer Cam #2 Relay from Red, Yellow & Blue Score Discs thru Mixer #4 Disc
D-1 N.O.	ASW-C1-21A	E-57	63-4 50-12	Brown- Yellow White	Completes circuit to Red, Yellow, Blue & Green (16) Score Disc (Mixer #3 Disc)
D-2 N.O.	ASW-C1-8A	D-35	56-16 58-15	White-Brown White-Black	Complete Circuit to Feature Game P-3 Relay
E-1 N.O.	ASW-C1-21A				NOT USED
F-1 N.O.	ASW-C1-15A	B-16	93-16 98-12	Grey-Yellow Grey-Black	Completes circuit to Double Section Step-Up Coil
G-1 N.O.	ASW-C1X-1A	D-30	95-9 80-8	Grey-White Black	Completes Game Start Circuit to Features Step-Up thru Green Button
G-2 N.O.	ASW-C1X-2A	E-23	40-18 52-5	Green White Blue	Completes Red Letter Win Circuit to Red Letter Step-Up & Features Step-Up for next game
G-3 N.O.	ASW-C1X-2A	J-6	20 23-11	Blue Blue- Yellow	Completes circuit to "Press Buttons Now & Change Score" Lites
H-1 N.O.	ASW-C2-29A	C-16	93-16 95-13	Grey-Yellow Grey-White	Opens circuit to Step Control Relay
MIXER LATCH COIL (I)	BA-26-1040	A-6	85-1 70	Black-White Orange	Operated thru Start Relay
INDEX COIL ASSY. COIL (J)	BF-27-1250	E-67	98-1 70	Grey-Black Orange	Operated thru Control Unit Cam #4A
J-1 N.O.	ASW-A1-11A	G-13	30 13-4	Yellow Red-Yellow	Completes Spotting Disc Circuits to Flash Score Lites
J-2 N.O.	ASW-A1-54A	G-8	30 81-6	Yellow Black-Red	Complete Spotting Disc Circuit to Flash Feature Lites
BLUE BUTTON STEP RELAY COIL	G-33-2800	A-61	71-13 83-17	Orange-Red Black-Yellow	Controls the Score Step-Up
K-1 N.O.	ASW-R1-3A	A-61	36-16 83-17	Yellow-Grey Black- Yellow	Completes circuit to B. B. Relay thru Timer Cam Index & Cam #5 R. E.
K-2 N.O.	ASW-R1-3A	E-56	53-15 13-13	White- Yellow Red-Yellow	Completes Circuit to Score Step-Up thru Mixer Disc #3 & Control Unit Cam #7

# TRIP RELAY BANK



TRIP RELAY BANK SWITCH & RELAY COIL FUNCTION CHART

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Colors	Function
CAM #2 Switch (A)	ASW-BO-1A				NOT CONNECTED
ALL 4-600	D-27-425	A-33	52-11 15J	White-Blue Red-White	Energized thru Spotting Disc & Alt. Cam #9B thru Red/Green Button
1. N.C.	ASW-B-2A	B-33	15-6 J	Red-White	Opens circuit to All 4-600 Coil
2. T.	ASW-B-3A	71-15	71-15 30 63-13	Orange-Red Yellow Brown-Yellow	Directs Circuit to All 4 Star 300 or 600 Lite
3. T.	ASW-B-3A	C-41	10-16 85-13 23-17	Red Black-White Blue-Yellow	Directs All 4 Star 300/600 Winner Circuit to Replay Counter Step-Up
4. N.O.	ASW-B-1A	C-33	80-9 40-11	Black Green	Completes a circuit to the All 4-300 Trip
5. N.O.	ASW-B-1A	A-33	52-11 70	White-Blue Orange	Completes a circuit to the All 4-300 Trip
6. T.	ASW-B-3A	E-41	98-18 81-20 83-13	Grey-Black Black-Red Black-Yellow	Directs All 4-300/600 Winner Search & Scoring Circuit

# TRIP RELAY BANK

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
ALL 4-300 COIL	D-27-425	A-33	52-11 J	White-Blue J	Energized thru Spotting Disc & Alt. Cam #9B, & also All 4-600 Trip Relay Circuit thru Green & Red Button
1. N.C.	ASW-B-2A	B-33	40-11 J	Green J	Opens Circuit to All 4-300 Coil
2. N.C.	ASW-B-2A	D-26	18-2 36-19	Red-Black Yellow-Brown	Opens circuit to Extra Ball Step Up
3. N.C.	ASW-B-2A	D-33	80-9 30	Black Yellow	Opens All 4-600 Circuit to All 4-300 Coil
4. N.O.	ASW-B-1A	G-9	61-19 71-15	Brown-Red Orange-Red	Completes Circuit to All 4 Star 300 Lite
5. N.O.	ASW-B-1A	E-41	81-20 23-8	Black-Red Blue- Yellow	Completes All 4 Star 300/600 circuit to Winner Search & Scoring Discs
6. N.C.	ASW-B-2A	B-25	74-7 51-4	Orange-Green White-Red	Opens Extra Ball Step-Up Circuit (Mixer #4 Disc)
ANY 3 STARS COIL	D-27-425	A-32	70 J	Orange J	Energized thru Spotting Disc ( & Alt. Cam #9C) by Red & Green Button Play & also any 2 Stars Trip Relay Circuit
1. N.C.	ASW-B-2A	A-32	51-11 J	White-Red J	Opens Circuit to Any 3 Stars Coil
2. N.C.	ASW-B-2A	D-59	85-10 91-17	Black-White Grey-Red	Opens circuit to Red Score Step-Up
3. N.C.	ASW-B-2A	C-32	38-2 30	Yellow-Black Yellow	Opens any 2 stars trip Relay Circuit to Any 3 Stars Coil
4. N.O.	ASW-B-1A	G-8	50-8 58-3	White White-Black	Completes circuit to Any 3 Stars Lite
5. N.O.	ASW-B-1A	F-51	74-11 98-16	Orange-Green Grey-Black	Completes Any 2, Any 3 Stars Red Letter Win for next game thru R Button
ANY 2 STARS COIL	D-27-425	A-32	70 J	Orange J	Energized thru Spotting Disc & Alt. Cam #9C during Red & Green Button Play
1. N.C.	ASW-B-2A	A-32	61-10 J	Brown-Red J	Opens circuit to Any 2 Stars Coil
2. N.C.	ASW-B-2A	D-58	83-4 85-10	Black-Yellow Black-White	Opens Red Score Step-Up Circuit (thru Mixer #3 Disc)
3. T.	ASW-B-3A	G-8	58-3 30 43-7	White-Black Yellow Green- Yellow	Directs circuit to Any 2/ Any 3 Stars Feature Lite
4. T.	ASW-B-3A	F-51	31-11 74-11 36-11	Yellow-Red Orange-Green Yellow-Brown	Directs any 2/Any 3 Star winner circuit to Red Letter Win Relay for next game thru R Button
5. N.O.	ASW-B-1A	C-32	38-2 51-11	Yellow-Black White-Red	Completes circuit to Any 3 Stars Trip Relay
GREEN DOUBLE COIL	D-27-425	A-56	71-B J	Orange-Red J	Energized thru the Mixer Unit Discs during Red/Blue (Score Step-Up) Button Play & Red Letter Winner Circuit
1. N.C.	ASW-B-2A	A-56	45-11 J	Green-White J	Opens circuit to Green Double Coil
2. N.C.	ASW-B-2A	C-61	31-7 13-11	Yellow-Red Red-Yellow	Opens a Score Control Circuit to the Blue & Green Score Step-Up (Mixer #3 Disc)
3. N.O.	ASW-B-1A	A-21	23-4 63-9	Blue- Yellow Brown- Yellow	Completes a circuit to Mixer #4 Relay thru Mixer #4 Disc & the Blue Score Disc
4. T.	ASW-B-3A	G-37	50-B 30 43-18	White Yellow Green- Yellow	Directs circuit Green Double Feature Game Lites

# TRIP RELAY BANK

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
5. T.	ASW-B-3A	C-50	91-19 65-9 90-19	Grey-Red Brown-White Grey	Directs Green Zone Winner to Double Feature Game Winner Step-Up Circuit
YELLOW DOUBLE COIL	D-27-425	A-56	71-13 J	Orange-Red J	Energized thru Mixer Unit Discs during Red/Blue (Score Step-Up) Button Play & Red Letter Winner Circuit
1. N.C.	ASW-B-2A	A-56	38-17 J	Yellow-Black J	Opens circuit to Yellow Double Coil
2. N.C.	ASW-B-2A	D-57	95-11 75-8	Grey-White Orange-White	Opens a score control circuit (Mixer #3) to the Yellow Score Step-Up
3. N.O.	ASW-B-1A	B-22	23-4 14-11	Blue-Yellow Red-Green	Completes a circuit to Mixer #4 Relay thru Mixer #4 Disc & Yellow Score Disc
4. T.	ASW-B-3A	G-36	60-16 30 41-19	Brown Yellow Green-Red	Directs circuit to Yellow Double Feature Game Lites
5. T.	ASW-B-3A	C-43	78-14 80-6 74-18	Orange-Black Black Orange-Green	Directs Yellow Zone Winner to Double Feature Game Step-Up Circuit
BLUE DOUBLE COIL	D-27-425	A-56	71-13 J	Orange-Red J	Energized thru Mixer Unit Discs during Red/Blue (Score Step-Up) Button play & Red Letter Winner Circuit
1. N.C.	ASW-B-2A	A-56	43-11 J	Green-Yellow J	Opens circuit to Blue Double Coil
2. N.C.	ASW-B-2A	D-61	90-4 31-7	Grey Yellow-Red	Opens a Score Control Circuit (Mixer #3 Disc) to Blue & Green Score Step-Up
3. N.O.	ASW-B-1A	B-21	23-4 58-2	Blue-Yellow White-Black	Completes a circuit to Mixer #4 Relay thru Mixer #4 Disc & Blue Score Disc
4. T.	ASW-B-3A	G-38	80-13 30 45-7	Black Yellow Green-White	Directs circuit to Blue Double Feature Game Lites
5. T.	ASW-B-3A	C-47	71-20 52-8 75-19	Orange-Red White-Blue Orange-White	Directs Blue Zone Winner to Double Feature Game Step-Up Circuit
RED DOUBLE COIL	D-27-425	A-56	71-13 J	Orange-Red J	Energized thru Mixer Unit Discs during Red/Blue (Score Step-Up) Button Play & Red Letter Winner Circuit
1. N.C.	ASW-B-2A	A-56	41-11 J	Green-Red J	Opens circuit to Red Double Coil
2. N.C.	ASW-B-2A	D-58	83-4 58-10	Black-Yellow White-Black	Opens a score control circuit (Mixer #3 Disc) to Red Score Step-Up
3. N.O.	ASW-B-1A	B-23	23-4 95-7	Blue-Yellow Grey-White	Completes a circuit to Mixer #4 Relay thru Mixer #4 Disc & Red Score Disc
4. T.	ASW-B-3A	G-35	51-19 30 40-17	White-Red Yellow Green	Directs circuit to Red Double Feature Game Lites
5. T.	ASW-B-3A	C-45	81-17 43-9 85-19	Black-Red Green-Yellow Black-White	Directs Red Zone Winner to Double Feature Game Step-Up Circuit
TILT COIL	D-27-425	A-11	70 14-5	Orange Red-Green	Energized thru Tilt Sw. Circuit Coin Anti-Cheat Circuit, Ball Lift Anti-Cheat & Key Sw. Circuit
1. N.C.	ASW-B-2A	F-17	40-8 93-3	Green Grey-Yellow	Opens a circuit to the Double Feature Disc, R-Button Search Wiper Lock Magnet & A, B, C Buttons (Mystic Lines Motors)
2. N.C.	ASW-B-2A	J-40	10-1 51-7	Red White-Red	Opens the main circuit to the Mystic Lines A, B, C Relays, Discs & Lites thru Transformer, 10 Amp. Fuse & Anti-Cheat Relay

# TRIP RELAY BANK

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
3. T.	ASW-B-3A	G-7	21-3 30 45-8	Blue-Red Yellow Green-White	Opens main 50 V. Circuit which blacks out entire game
4. T.	ASW-B-3A	J-29	36-17 18-15 91-2	Yellow-Brown Red-Black Grey-Red	Directs 6V. circuit (10 Amp.) to Score Discs (Lites) thru Anti-Cheat Relay & Lites Tilt Lite
5. N. C.	ASW-B-2A	F-1	60P 30P	Brown Yellow	Cuts power to Mixer & Control Units
6. N. O.	ASW-B-1A	D-12	57-6 85-7	White-Orange Black-White	Completes a circuit to the Red Button Relay
7. N. O.	ASW-B-1A	B-4	61-8 13-16	Brown-Red Red-Yellow	Completes a safety circuit to Start Relay
EXTRA BALL #1 COIL	D-27-425	A-14	70 J	Orange J	Energized thru extra-ball trip #2 switch
1. N. C.	ASW-B-2A	C-26	91-6 85-4	Grey-Red Black-White	Opens Control Unit Cam Sw. #5B to Anti-Cheat Relay
2. T.	ASW-B-3A	G-26	85-4 30 95-20	Black-White Yellow Grey-White	In Series with above #1 Sw. Directs current to Extra Ball Step-Up & Opens Circuit to Mystic Lines & Sel. Feat. Step-Up - Also Scores Step-Up (Yellow Button)
3. T.	ASW-B-3A	E-27	81-11 56-6 45-2	Black-Red White-Brown Green-White	Directs current to extra ball Step-Up & opens circuit to Scores Step-Up & Multi-Features (Yellow Button)
4. N. O.	ASW-B-1A	C-10	83-1 71-8	Black-Yellow Orange-Red	Completes a circuit to the Timer Unit Reset Coil
5. N. C.	ASW-B-2A	A-13	58-12 J	White-Black J	Opens a circuit to the Extra Ball #1 Trip Coil
6. N. C.	ASW-B-2A	E-20	25-5 41-17	Blue-White Green-Red	Opens a circuit to the Blue Score Disc (via Mixer #1 Disc) & on to Mixer #4 Re. when ex. balls are played.
7. N. O.	ASW-B-1A	G-29	51-14 23-6	White-Red Blue- Yellow	Completes a Circuit to the Extra Ball Lite thru the Red Button Relay
8. N. O.	ASW-B-1A	E-4	50-2 80-11	White Black	Completes Extra Ball Replay Circuit to Start Relay
EXTRA BALL #2 COIL	D-27-425	A-12	70 J	Orange J	Energized by Yellow Button Sw. #1 after 5th Ball is shot
1. N. C.	ASW-B-2A	A-12	10-6 J	Red J	Opens circuit to this Coil
2. N. C.	ASW-B-2A	C-11	20-2 85-7	Blue Black-White	Opens a circuit to the Red Button Relay (Start Game)
3. T.	ASW-B-3A	B-7	53-5 61 98-2	White-Yellow Brown-Red Grey-Black	Directs circuit to Timer Cams Index Coil thru Red Button (Start Game) & opens a circuit to Shutter Motor
4. N. O.	ASW-B-1A	B-13	91-1 38-3	Grey-Red Yellow-Black	Completes a circuit to the Ball Lifter Motor for an extra ball
5. N. C.	ASW-B-2A	G-8	31-16 81-6	Yellow-Red Black-Red	Opens a Spotting Disc Circuit preventing Extra Ball Flash Lites Operating except when playing Yellow Button Game after 5th Ball
6. N. C.	ASW-B-2A	D-29	83-9 40-4	Black- Yellow Green	Opens a circuit which locks out all other features while Yellow Button is being operated
7. T.	ASW-B-3A	H-12	15-17 13-4 78-19	Red-White Red- Yellow Orange-Black	Directs current to the extra ball flash lites & locks out play feature lites when operating yellow button
8. N. O.	ASW-B-1A	B-14	21-3 58-12	Blue-Red White-Black	Completes circuit to Extra Ball Trip #1 Coil
RED ROLL OVER COIL	D-27-425	A-53	70 J	Orange J	Energized thru Shutter Motor Cam #1D, Timer Unit Circuits - thru Selection Fea. Disc & Red R. O. Button
1. N. C.	ASW-B-2A	A-53	25-13 J	Blue-White J	Opens circuit to Red. R. O. Coil

# TRIP RELAY BANK

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
2. T.	ASW-B-3A	H-4	51-12 10-11 53-12	White-Red Red White-Yellow	Directs circuit to flash mystic lines, "press buttons now," after 5th ball lite & Red Playfield Lite
3. T.	ASW-B-3A	G-6	31-8 10-11 53-12	Yellow-Red Red White-Yellow	Directs circuit to Select After 5th Ball Lite & Drops out Select Before 4th/5th Lite Circuit
4. N.O.	ASW-B-1A	E-18	93-3 21-12	Grey-Yellow Blue-Red	Completes circuit to Mystic Lines Feature, A, B, C Buttons for play after 5th Ball
YELLOW ROLL - OVER COIL	D-27-425	A-52	70 J	Orange J	Energized thru Shutter Motor Cam #1D, Timer Unit Circuits - thru Selection Fea. Disc & Yellow R.O. Button
1. N.C.	ASW-B-2A	A-52	38-13 J	Yellow-Black J	Opens circuit to Yellow R.O. Coil
2. T.	ASW-B-3A	H-4	75-18 51-12 23-5	Orange-White White-Red Blue-Yellow	Directs circuit thru Timer Disc to flash Mystic Lines Press Buttons Now Before 5th Ball Lite & Yellow Playfield Lite
3. T.	ASW-B-3A	H-7	57-5 31-8 74-8	White-Orange Yellow-Red Orange-Green	Directs circuit to Select Before 5th Ball Lite & Drops out Sel. Bef. 4th Ball Lite
4. N.O.	ASW-B-1A	E-18	93-3 98-3	Grey-Yellow Grey-Black	Completes circuit to Mystic Lines Fea. A, B, C Buttons for play before 5th ball
CHANGE SCORES BEFORE 2nd BALL COIL	D-27-425	A-14	70 J	Orange J	Energized thru shutter motor cam #1D, selection feature disc, Shutter Cam #5 X, Lifter Start Re., Lifter Cam #1, Trough Sw.'s (2 Balls) & Timer Disc
1. N.C.	ASW-B-2A	A-14	52-15 J	White-Blue J	Opens circuit to this Coil
2. N.C.	ASW-B-2A	G-18	25-17 36-7	Blue-White Yellow-Brown	Opens Selector Button Circuit to the Change Score Lites Feature after shooting 2nd ball.
3. N.C.	ASW-B-2A	E-17	57-17 81-16	White-Orange Black-Red	Opens circuit after shooting 2nd ball
4. N.O.	ASW-B-1A	E-9	13-17 43-2	Red-Yellow Green-Yellow	Completes circuit to timer unit Step-Up Coil after shooting 2nd ball
CHANGE SCORES BEFORE 3rd BALL COIL	D-27-425	A-14	70 J	Orange J	Energized thru Shutter Motor Cam #1D, Selection Fea. Disc, Shutter cam 5x, Lifter Start Re., Lifter Cam #1, Trough Sw.'s (3 balls) & Timer Disc
1. N.C.	ASW-B-2A	A-14	85-11 J	Black-White J	Opens Circuit to this Coil
2. N.C.	ASW-B-2A	G-19	18-20 45-19	Red-Black Green-White	Opens Selector Button Circuit to the Change Score Lites Feature after shooting 3rd ball
3. N.C.	ASW-B-2A	E-17	48-18 14-13	Green-Black Red-Green	Opens circuit after shooting 3rd Ball
4. N.O.	ASW-B-1A	E-9	14-13 43-2	Red-Green Green-Yellow	Completes circuit to Timer Unit Step-Up Coil after shooting 3rd Ball
PRESS BUTTONS BEFORE 4th BALL COIL (Mystic Lines)	D-27-425	A-15	70 J	Orange J	Energized thru Shutter Motor Cam #1D, Selection Feature Disc, Shutter Cam 5X, Lifter Start Re. Lifter Cam #1, Trough Sw.'s (4 Balls), & Timer Disc
1. N.C.	ASW-B-2A	A-15	83-6 J	Black-Yellow J	Opens Circuit to this Coil
2. N.C.	ASW-B-2A	H-4	27-4 75-18	Blue-Orange Orange-White	Opens after 4th Ball is shot to shut off Press A B C Buttons Now
3. T.	ASW-B-3A	E-17	98-3 93-3 53-18	Grey-Black Grey-Black White-Yellow	Directs circuit to Winner Search Wiper Lock Magnet thru R Button (collect) after 4th ball is shot & locks out Mystic Lines A, B, C Button Circuit
4. N.C.	ASW-B-1A	E-9	36-2 43-2	Yellow-Brown Green-Yellow	Completes circuit to Timer Unit Step-Up after shooting 4th Ball

# TRIP RELAY BANK

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
5. N.O.	ASW-B-1A	F-41	15-5 40-5	Red-White Green	Completes Search & Scoring Circuit for all Reg. Zone & Star Winners
PRESS BUTTON BEFORE 5th BALL COIL	D-27-425	A-15	70 J	Orange J	Energized thru Shutter Motor Cam #1D, Selection Fea. Disc, Shutter Cam 5x, Lifter Start Re., lifter Cam #1, Trough Sw.'s (5 balls) & Timer Disc
1. N.C.	ASW-B-2A	H-7	52-12 56-12	White-Blue White-Brown	Opens circuit to Select Before 5th Ball Panel Lite
2. N.C.	ASW-B-2A	B-52	13-12 38-13	Red-Yellow Yellow-Black	Opens circuit to Yellow Roll-Over Coil thru Sel. Fea. Disc
3. N.C.	ASW-B-2A	D-18	98-3 21-12	Grey-Black Blue-Red	Opens circuit to Mystic Lines A, B, C Buttons after 5th ball has been played
4. N.O.	ASW-B-1A	D-10	54-11 71-8	White-Green Orange-Red	Completes circuit to Timer Unit Reset Coil & Trip Bank Reset Motor thru R Button (collect)
5. N.O.	ASW-B-1A	D-9	78-6 27-2	Orange-Black Blue-Orange	Completes circuit to timer unit step-up coil after 5th ball has been played
6. N.C.	ASW-B-2A	A-15	74-6 J	Orange-Green J	Opens circuit to Before 5th Ball Coil
7. T.	ASW-B-3A	J-5	14-18 48-12 53-2	Red-Green Green-Black White-Yellow	Directs circuit to Press A, B, C Buttons Now & opens this circuit after 5th ball has been played
8. N.O.	ASW-B-1A	B-12	10-6 25-8	Red Blue-White	Completes circuit to Extra Ball Trip #2 thru Yellow (Extra Ball) Button
9. N.O.	ASW-B-1A	E-4	80-11 18-6	Black Red-Black	Completes Extra Ball Replay Play Circuit (Yellow Button) to Start Relay
PRESS BUTTONS AFTER 5th BALL COIL	D-27-425	A-15	70 J	Orange J	Energized thru Shutter Motor Cam #1D, Selection Fea. Disc, Shutter Cam 5x Lifter Start Re, Lifter Cam #1 & Trough Sw. #2 (6 Balls)
1. N.C.	ASW-B-2A	A-15	98-11 J	Grey-Black J	Opens circuit to After 5th Ball Coil
2. N.C.	ASW-B-2A	D-18	21-12 14-4	Blue-Red Red-Green	Opens circuit to Mystic Lines Feature A. B. C Buttons
3. N.C.	ASW-B-2A	B-53	15-12 25-13	Red-White Blue-White	Opens circuit to Red Roll-Over Trip Coil thru Sel. Fea. Unit Disc
4. N.C.	ASW-B-2A	H-5	53-2 52-13	White-Yellow White-Blue	Opens Circuit to "Press A, B, C Buttons Now" lite after 6th ball has been shot
5. N.C.	ASW-B-2A	H-8	41-8 60-12	Green-Red Brown	Opens circuit to Red Roll-Over Panel Lite
CARRY-OVER CAM #1					
1. N.O.	ASW-B-20A	B-10	30 90-20	Yellow Grey	Complete a circuit to the Trip Bank Reset Motor
2. N.C.	ASW-B-2A	E-51	98-16 60-1	Grey-Black Brown	Opens Red Letter Game search winner circuit
3. N.C.	ASW-B-2A	H-13	74-9 78-19	Orange-Green Orange-Black	Opens circuit to Spotting Disc extra Ball Flash Lites for new game
4. N.C.	ASW-B-2A	D-25	95-20 61-2	Grey-White Brown-Red	Opens guaranteed Extra Ball #1 Step-Up Coil



# STEPPING UNITS SW. & COIL CHART

Note: Following this chart in the same unit sequence is the Contact Plate Discs showing complete circuit function & distribution.

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
<b>SELECTION FEATURE UNIT</b>					
STEP-UP COIL	B-25-925	A-30	70 48-10	Orange Green-Black	Energized thru Feature Control Circuit during Red or Green Button Play & also thru Red Letter Win.
RESET COIL	C-28-1100	B-67	70 85-15	Orange Black-White	Energized thru Shutter Motor Cam Sw. 2 D (3B on Diag.).
1. N.C. Open at Top	ASW-U2-6A	D-31	50-5 90-15	White Gray	Opens a features control Step-Up circuit thru spotting disc
2. N.C. Open at Top	ASW-U2-5A	A-30	48-10 J	Green-Black Jumper	Opens circuit to Selection Feature Step-Up Coil
<b>MYSTIC LINES FEATURE UNIT</b>					
MYSTIC LINES STEP-UP COIL	B-25-925	A-29	70 J	Orange Jumper	Energized Thru Feature Control Circuit during Red & Green Button Play & also thru Red Letter Win.
RESET COIL	C-28-1100	C-67	70 78-3	Orange Orange-Black	Energized thru shutter motor cam Sw. 2H (Diag. #6B.)
1. N.C. Open at Top	ASW-U2-5A	A-29	81-7 J	Black-Red Jumper	Opens circuit to Mystic Lines Step-Up Coil
<b>BLUE ZONE REPLAY COUNTER</b>					
BLUE REPLAY STEP-UP COIL	B-25-925	C-48	56 36-1	White-Brown Yellow-Brown	Energized thru Blue Zone 3-4-5 Ball Winner Circuit.
RESET COIL	C-28-1100	B-67	70 85-5	Orange Black-White	Energized thru shutter Motor Cam Sw. 2 D (#3B on Diag.).
1. N.C. Open at 96th Step	ASW-U1-21	D-47	91 93	Gray-Red Gray-Yellow	Opens at completion of a Blue Zone 5th Ball Winner (3rd step 96 win & 5th step 96 win on Score Schedule) See Replay Counter Disc.
1. N.O. Step-Up Arm	ASW-U1-9A E.O.S.	B-42	65-11 75-6	Brown-White Orange-White	Completes circuit to advance Multiple Unit during Blue X2 & X4 Double Feature Winners
<b>GREEN ZONE REPLAY COUNTER</b>					
GREEN REPLAY STEP-UP COIL	B-25-925	D-50	13-2 36-1	Red-Yellow Yellow-Brown	Energized thru Green Zone 3-4-5 ball winner circuit.
RESET COIL	C-28-1100	B-67	70 85-5	Orange Black-White	Energized thru Shutter Motor Cam Sw. 2 D (#3B on Diag.)
1. N.C. Open at 96th Step	ASW-U1-21	D-47	91 93	Gray-Red Gray-Yellow	Opens at completion of a Green Zone 5 Ball Winner (3rd Step (96 win) & 5th Step (96 win) on score schedule) See Replay Counter Disc.
1. N.O. Step-Up Arm	ASW-U1-9A E.O.S.	B-43	65-11 75-6	Brown-White Orange-White	Completes circuit to advance Multiple Unit during Green X2 & X4 Double Feature Winners
<b>RED ZONE REPLAY COUNTER</b>					
RED REPLAY STEP-UP COIL	B-25-925	C-45	83 85	Black-Yellow Black-White	Energized thru Red Zone 3-4-5 Ball Winners Circuit
RESET COIL	C-28-1100	B-67	70 85-5	Orange Black-White	Energized thru Shutter Motor Cam Sw. 2D (#3B on Diag.).
1. N.C. Open at 96th Step	ASW-U1-21	D-45	71 53	Orange-Red White-Yellow	Opens at completion of a Red zone 5 ball winner (3rd step 96 win) & 5th step (96 win) on score schedule see Replay Counter Disc.
1. N.O. Step-Up Arm	ASW-U1-9A E.O.S.	B-42	65-11 75-6	Brown-White Orange-White	Completes circuit to advance Multiple Unit during Red X2 & X4 Double Feature Winners

# STEPPING UNITS SW. & COIL CHART

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
<b>YELLOW ZONE REPLAY COUNTER</b>					
YELLOW RE-PLAY STEP-COIL	ASW-U1-9A	C-44	31 71-19	Yellow-Red Orange-Red	Energized thru Yellow Zone 3-4-5 ball winners circuit
RESET COIL	C-28-1100	B-67	70 85-5	Orange Black-White	Energized thru Shutter Motor Cam Sw. 2D (#3B on Diag.)
1. N.C. Open at 96th Step	ASW-U1-21	D-43	23 25	Blue-Yellow Blue-White	Opens at completion of a Yellow Zone 5 Ball Winner (3rd Step) (96 win) & 5th step (96 win) on score schedule. See <b>Replay Counter Disc.</b>
1. N.O. Step-Up Arm	ASW-U1-9A E.O.S.	B-42	65-11 75-6	Brown-White Orange-White	Completes circuit to advance Multiple Unit during Yellow X2 & X4 Double Feature Winners
<b>REPLAY REGISTER UNIT</b>					
REPLAY REG. STEP-UP COIL	A-26-1100	A-38	70 80-19	Orange Black	Energized thru the Replay Cam Index & Control Unit Switch N2 (see C.U. Illust.) (12 Pulse) also via C.U. Switch <b>K1 &amp; Multiplay Relay</b> also <b>Key Unit.</b>
RESET COIL	A-27-1100	A-3	70 45-9	Orange Green-White	Energized thru Control Unit Cam Sw. G-5 (See C.U. illust.) in series with Cam #7 Relay & Reflex Play Magnet (this circuit works when playing off winners thru Red, Green, Blue & Yellow Buttons.)
1. T.	ASW-U3-6A	F-4	56-2 98-19 27-9	White-Brown Gray-Black Blue-Orange	Directs reset circuit to replay reset relay & register reset coil (replays only) or to Coin Circuit when no replays.
1. N.O.	ASW-U1-6A	D-4	63-2 10-5	Brown-Yellow Red	Completes circuit to start relay when playing replays thru buttons.
<b>RED LETTER UNIT</b>					
RED LETTER STEP-UP COIL	B-25-925	A-24	70 J	Orange Jumper	Energized thru Mixer Unit Cam Sw. G-2 (See Mixer Unit Illust.) during Red Letter Winners.
RESET COIL	C-28-1100	D-67	70 78-3	Orange Orange-Black	Energized thru Shutter Motor Cam H-2 (#6B on Diag.).
1. T. Open at 29th Step	ASW-U3-4A	D-23	J 52-5 81-7	Jumper White-Blue Black-Red	Directs Circuit from Red Letter Step-Up to Mystic Lines Step-Up
<b>EXTRA BALL UNIT</b>					
E-B STEP-UP COIL	B-25-925	A-25	70 27-20	Orange Blue-Orange	Energized thru E-B control circuit during yellow button play.
RESET COIL	C-28-1100	D-67	70 78-3	Orange Orange-Black	Energized thru Shutter Motor Cam Sw. H2 (#6B on Diag.).
<b>MULTIPLIER UNIT</b>					
MULT. STEP-UP COIL	B-25-925	A-42	70 75-6	Orange Orange-White	Energized thru X2 or X4 Win Relays (Double Fea. Game) & also Mult. Unit Home Disc.
<b>YELLOW SCORE UNIT</b>					
YELLOW SCORE STEP-UP COIL	B-25-925	A-57	71-13 J	Orange-Red Jumper	Energized thru Yellow Score Control Circuit during Red or Blue Button Play & also thru Red Letter Win.
RESET COIL	C-28-1100	C-67	70 78-3	Orange Orange-Black	Energized thru Shutter Motor Cam Sw. H2 (#6B on Diag.).
1. N.O. STEP-UP ARM	ASW-U2-12A	B-61	90-18 20-18	Gray Blue	Completes a circuit to 1 or 2 Extra Step Relay thru the Score Disc & Mixer No. 5 Disc.
2. N.O. STEP-UP ARM	ASW-U1-9A	B-57	83-17 31-6	Black-Yellow Yellow-Red	Completes Score Step-Up Circuit (12-16-24) to BB Step Relay (Blue Button Score Steps)

# STEPPING UNITS SW. & COIL CHART

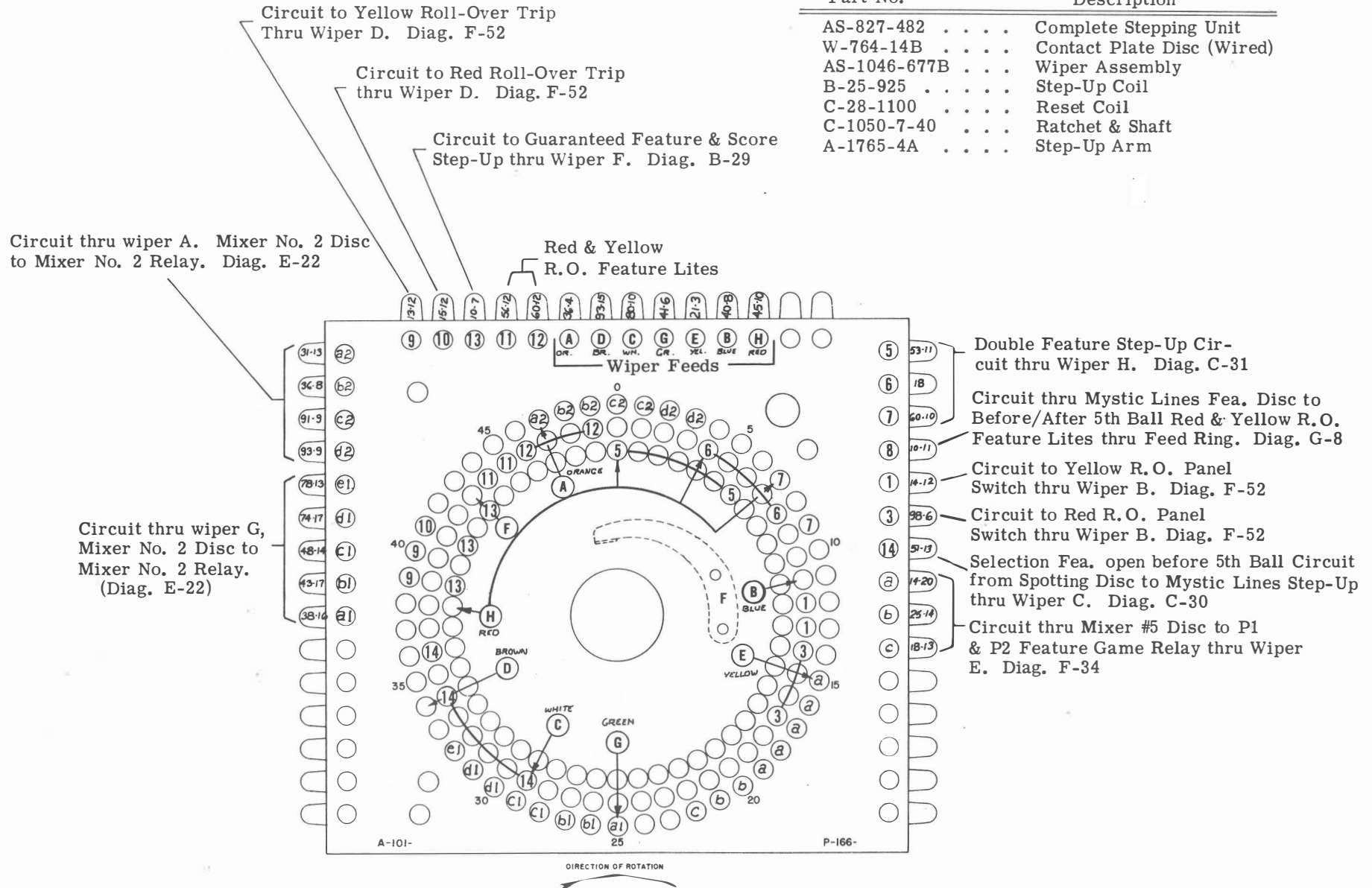
Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
<b>YELLOW SCORE UNIT (cont'd)</b>					
1. N.C. Operate at Top	ASW-U2-5A	A-57	54-14 J	White-Green Jumper	Opens circuit to yellow Step-Up Coil
2. N.O. Open at Zero	ASW-U2-1A	F-7	14-14 45-8	Red-Green Green-White	Completes an anti-cheat circuit to the Shutter Motor.
3. N.O. Open at Zero	ASW-U2A	A-55	31-15 70	Yellow-Red Orange	Completes circuit to Features & Scores Play & Lock Relays (Red, Blue & Green Buttons).
<b>RED SCORE UNIT</b>					
RED SCORE STEP-UP COIL	B-25-925	A-58	71-13 J	Orange-Red Jumper	Energized thru the Red Score Control Circuit thru Blue & Red Button Play & also thru Red Letter Win.
RESET COIL	C-28-1100	A-67	70 15-4	Orange Red-White	Energized thru Shutter Motor Cam Sw. D-2 (#3B on Diag.).
1. N.O. STEP-UP ARM	ASW-U2-12A	B-63	91-18 48-17	Gray-Red Green-Black	Completes a Step-Up Circuit to 1 or 2 Extra Step Relay thru Score Disc & Mixer #5 Disc.
2. N.O. STEP-UP ARM	ASW-U1-9A	B-59	83-17 36-21	Black-Yellow Yellow-Brown	Completes a red Score Step-Up Circuit (8-12-16-24) to BB Step Relay (Blue Button Score Steps)
1. N.C. Open At Top	ASW-U2-5A	A-58	J 52-19	Jumper White-Blue	Opens circuit to Red Score Step-Up Coil.
<b>BLUE &amp; GREEN SCORE UNIT</b>					
B & G SCORE STEP-UP COIL	B-25-925	A-60	71-13 J	Orange-Red Jumper	Energized thru the Blue & Green Score Control Circuit thru Blue & Red Button Play & also thru Red Letter Win.
RESET COIL	C-28-1100	C-67	70 78-3	Orange Orange-Black	Energized thru Shutter Motor Cam Sw. H2 (#6B on Diag.).
1. N.O. STEP-UP ARM	ASW-U2-12A	B-64	93-19 65-17	Gray-Yellow Brown-White	Completes a score step-up circuit to the extra step relays thru the score disc & mixer #5 disc (12-120).
2. N.O. STEP-UP ARM	ASW-U1-9A	B-61	38-21 83-17	Yellow-Black Black-Yellow	Completes a Blue-Gr. Score Step-Up Circuit (8-12-16-24) to BB Step Relay (Blue-Button Score Step-Up).
1. N.C. Open at Top	ASW-U2-5A	A-60	J 14-15	Jumper Red-Green	Opens circuit to blue & Green Score Step-Up Coil.
2. N.C. Open at Zero	ASW-U1A	D-12	57-6 85-7	White-Orange Black-White	Provides a hold-in circuit to Red Button Relay for starting a game.
<b>DOUBLE FEATURE UNIT</b>					
DOUBLE FEA. STEP-UP	B-25-925	A-27	38-9 54-2	Yellow-Black White-Green	Energized thru the Double Feature Game Control Circuit (Blue Button Play) & also thru Cam #5 Relay.
RESET COIL	C-28-1100	E-67	70 78-3	Orange Orange-Black	Energized thru Shutter Motor Cam Sw. H2 (#6B on Diag.).
1. T.	ASW-U3A	B-16	56-11 95-13 71-9	White-Brown Gray-White Orange-Red	Directs circuit to Selector Button Play when Feature is lit.
<b>TIMER UNIT</b>					
TIMER UNIT STEP-UP COIL	B-25-925A	A-9	70 J	Orange Jumper	Energized thru Timer Disc Count Circuit by Ball Lifter Cam #2 for first 5 steps & by C.U. Cam Sw. A1 for last 3 Steps.
RESET COIL	C-28-1100	A-10	70 J	Orange Jumper	Energized by Cam #5 Relay Sw. during Extra Ball Play, Shutter Motor Cam Sw. H1 (#6A on Diag.) for new game & "R" Button Collect Circuit.
1. N.C. Open at Top (Top Unit)	ASW-U2-5A	B-9	27-2 J	Blue-Orange Jumper	Opens circuit to Timer Unit Step-Up Coil

# STEPPING UNITS SW. & COIL CHART

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
Timer Unit (Cont'd)					
2. N. C. Open at Top	ASW-U2-6A	G-1	20P 30P	Blue Yellow	Opens circuit to Control Unit Motor & Mixer Unit Motor
3. N. O. Open at Zero	ASW-U2-2A	F-53	90-9 30	Gray Yellow	Completes a circuit to the Lifter Start Relay
4. N. O.	ASW-U2-1A	B-13	91-1 38-3	Gray-Red Yellow-Black	Completes a circuit to Ball Lifter Motor
5. N. O. Open at Zero	ASW-U2A	B-10	J 71-8	Jumper Orange-Red	Completes a circuit to Timer Unit Timer Unit Reset Coil
REFLEX UNIT					
REFLEX UNIT PLAY MAG-	EA-32-1550	A-3	70 90-5	Orange Gray	Energized thru Control Unit Can Sw. G4 (See C. U. Unit illust.) thru button scores & fea. play in series with Cam #7 Relay & Replay reg. Reset Coil.
REFLEX UNIT REPLAY	EA-30-1150	A-39	70 61-14	Orange Brown-Red	Energized thru color zone & star winners thru 12 Pulse Control Unit Cam Back Sw. V1 (See C. U. Illust.) & N2 (top Sw.).
DOUBLE SELECTION UNIT (Mounting Board)					
DOUBLE FEA. STEP-UP	B-25-925	A-16	70 98-12	Orange Gray-Black	Energized thru the Double Selection Disc thru the Step Control Relay (Blue Button Play), also thru the Selector Button when this Feature is lit.
COIN UNIT (Front Cabinet)					
COIN UNIT STEP-UP	BD-25-925	A-5	70 80-2	Orange Black	Energized by Coin Sw. via Control Unit Cam Sw. D2 (see C. U. Illustr.) In series with Coin Meter to alternately divide cash between Two Cash Boxes (Adjustable)
COIN DIVIDER COIL (Door Mount)					
COIN DIVIDER COIL	FC-33-2600	A-9	70 95	Orange Gray-White	Energized thru the Coin Unit Stepper Disc to Divide the coins between the Two Cash Boxes. Disc also has an adjustment Plug for a 1/6, 1/5, 1/4, 1/3, 1/2 Coin Split.

7-Step-Unit Wipers shown in a Reset Position

Part No.	Description
AS-827-482 . . . . .	Complete Stepping Unit
W-764-14B . . . . .	Contact Plate Disc (Wired)
AS-1046-677B . . . . .	Wiper Assembly
B-25-925 . . . . .	Step-Up Coil
C-28-1100 . . . . .	Reset Coil
C-1050-7-40 . . . . .	Ratchet & Shaft
A-1765-4A . . . . .	Step-Up Arm



SELECTION FEA. DISC

**MYSTIC LINES FEA. UNIT DISC**

Part No.	Description
AS-827-491 . . . .	Complete Stepping Unit
W-1056-3B . . . .	Contact Plate Disc (Wired)
AS-1046-471B . . .	Wiper Assembly
C-1060-12-49 . . .	Ratchet & Shaft
B-25-925 . . . . .	Step-Up Coil
C-28-1100 . . . . .	Reset Coil
ASW-U2-5A . . . .	Switch (Open at Top)

Thru Wiper C & D, Circuit to Mixer #2 Disc thru Sel. Fea. Disc to Mixer #2 Relay. Diag. F-21

Thru Wipers B & E, Double Fea. Circuit thru Spotting Disc. Diag. C-30

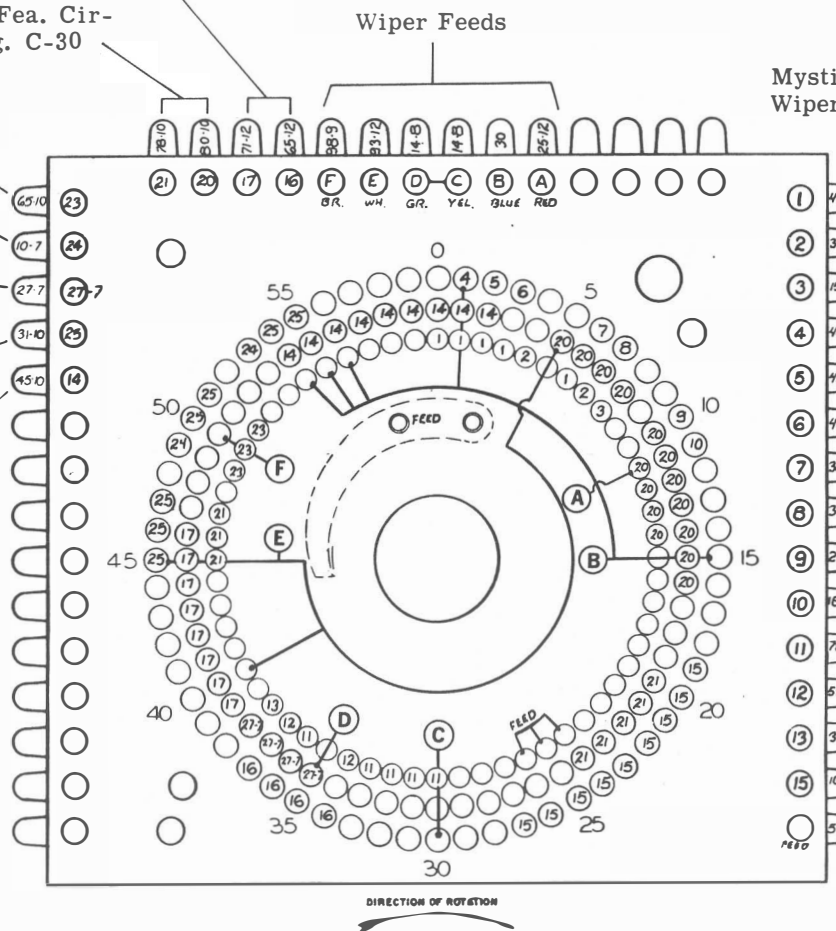
Double Feature Step-Up Circuit thru Spotting Disc(O) (Diag. C-31)

Extra Ball Step-Up Circuit thru Control Unit Cam #5C thru Wiper A. Diag. B-29

Thru Wiper C to Mixer #2 Relay & Sel. Fea. Unit Disc. Diag. A-24

To Spotting Disc (33). Diag. C-30

Thru Wiper F Selection Fea. Step-Up Circuit. Diag. A-31



Mystic Lines A, B, C Lites Step-Up thru Wiper B & Spotting Disc. Diag. H-10

Mystic Lines Step-Up Arrow Lites thru Wiper B & Spotting Disc. Diag. H-10

Circuit to A Button Diag. C-18

Circuit to B Button Diag. C-18

Circuit to C Button Diag. C-18

Circuit thru Wiper B to Select Now Lite Circuit. Diag. G-5

Feed to A, B, C Button Circuit. Diag. D-18

12 Step Unit. Wipers Shown in Reset Position

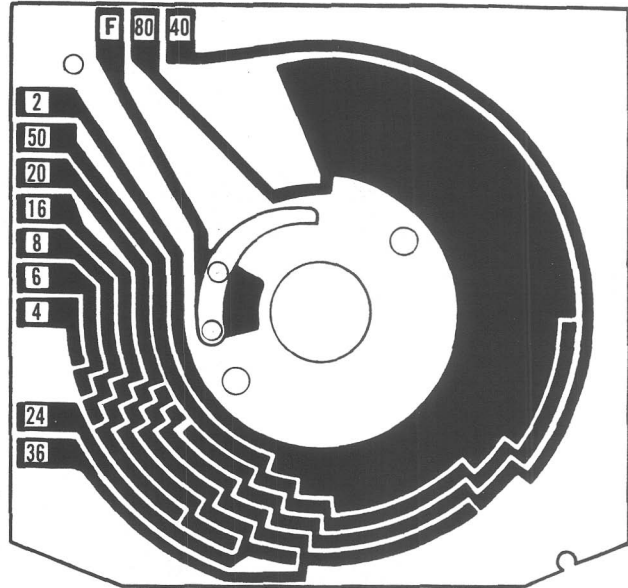
# REPLAY COUNTER UNIT DISC

VIEWED FROM WIPER SIDE

4 IDENTICAL UNITS USED

## DISC REPLAY VALUE CHART

Replay Value	Green Replay Counter	Yellow Replay Counter	Red Replay Counter	Blue Replay Counter
Lug No.	Wire No.	Wire No.	Wire No.	Wire No.
50	60-9	57-2	40-3	54-6
80	61-9	50-6	27-8	61-6
Feed	54	23	71	91
36	90-8	51-2	23-3	74-3
24	13-1	41-2	20-3	65-3
20	27-6	40-2	10-3	63-3
16	45-12	23-2	85-2	60-3
8	40-9	93-1	83-2	48-3
6	36-14	81-1	74-2	43-3
4	41-9	78-1	60-2	41-3
40	57-9	52-2	25-3	80-3
2	63-12	60-2	21-16	75-11



## PARTS LIST CHART

Part No.	Description
AS-797-225	Replay Counter (Complete) - 4 Units Used
W-728-9A	Contact Plate Disc (Wired)
AS-1046-134A	Wiper Assembly
C-100B	Ratchet & Shaft
B-25-925	Step-Up Coil
C-28-1100	Reset Coil
A-1765-8A	Step-Up Arm
ASW-1A	Switch (Open at 96th Step)
ASW-U1-9A	Switch (E. O. S.)

Winners Replay Circuit thru the Red, Blue, Green & Yellow Score Discs & Feature Win Circuit to the Replay Counter Step-Up (Diag. D-41 to D-51).

## REPLAY SCORE

The Top No. 's N1 x1 etc.) refer to the Control Unit Multiplier Cam Switches (#AS-982-920A - see Control Unit Sw. Function Chart - Diag. B-44). These Switches advance Green, Red, Yellow & Blue Replay Counter Units during 3, 4 & 5 color zone winners.

During a feature Game Winner (1/2, 2x, 4x) the Winners Replay Step-Up Circuit goes thru the color zones Double Trip, Selection Relay & "C" Relays (1/2 & 2x) to energize the 1/2, 2x & 4x Relays (Diag. A-43).

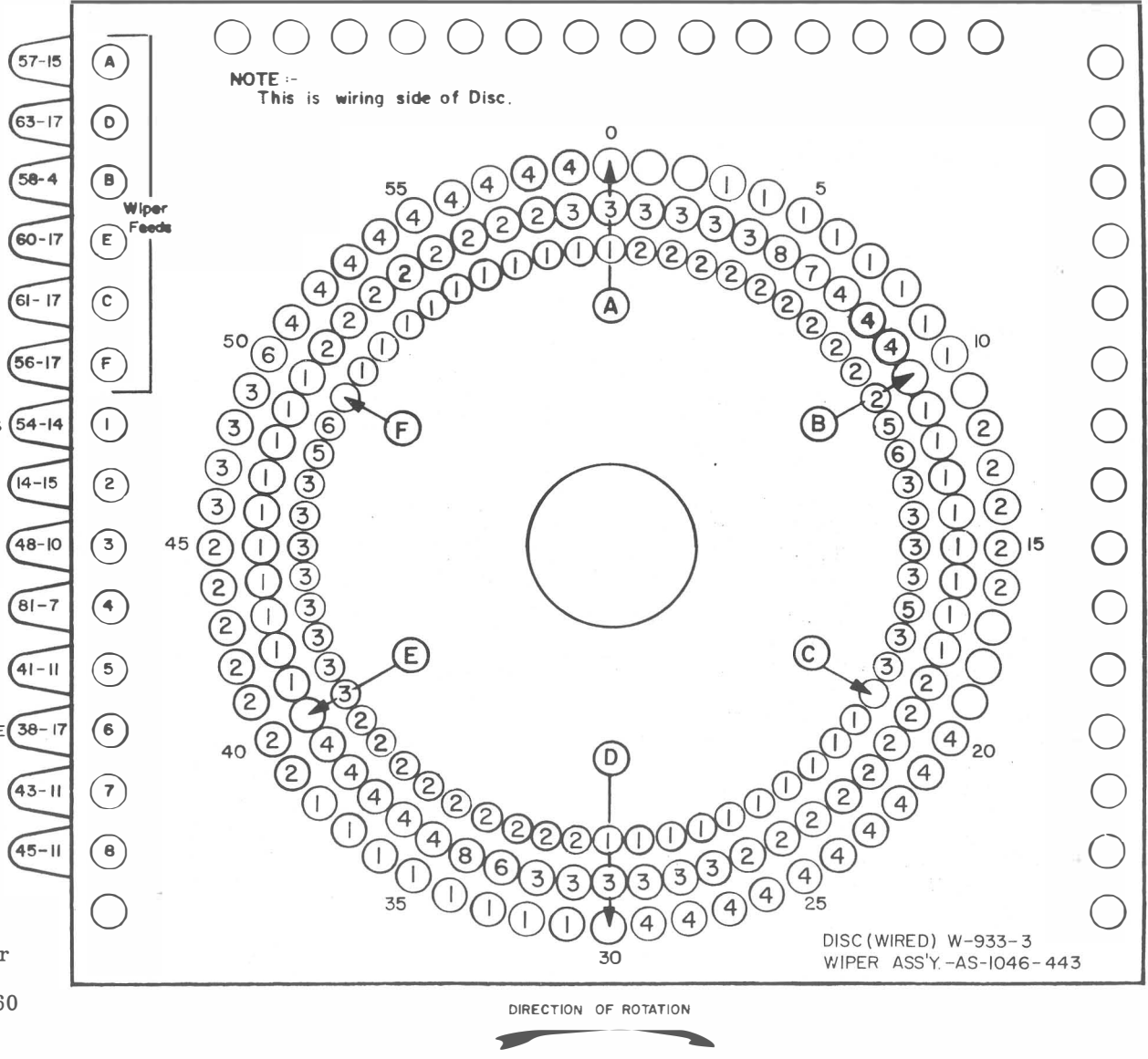
	N1 x1	N1x1	N1 x1	M1 x6	N1 x1	O1 x4	M1 x6	O1 x4	M1 x6	L1 x12
5 In A Zone	80 (80)	80 (80)	96 (*)	96 (16)	96 (*)	144 (36)	216 (36)	320 (80)	480 (80)	600 (50)
4 In A Zone	16 (16)	20 (20)	24 (24)	36 (6)	50 (50)	64 (16)	96 (16)	144 (36)	240 (40)	480 (40)
3 In A Zone	4 (4)	6 (6)	8 (8)	12 (2)	16 (16)	24 (6)	36 (6)	64 (16)	120 (20)	192 (16)

The large numbers (80, 96 etc) are Yellow, Green, Red & Blue Replay Score Values shown on back-glass. Circled Numbers indicate the Replay Counter Disc Value that each score is effective thru during winners. Circled Asterisk indicates that circuit is effective thru "Open at 96th Step Replay Counter Unit Switch.

Part No.	Description
AS-1022-91	Red Letter Unit (complete)
W-933-3B	Contact Plate Disc (Wired)
AS-1046-443A	Wiper Assembly
C-1060-29-7A	Ratchet & Shaft
B-25-925	Step-Up Coil
C-38-1100	Reset Coil
A-1765-13A	Step-Up Arm
ASW-U3-4A	Switch (Oper at Top)

- YELLOW SCORES 54-14
- BLUE & GREEN SCORES 14-15
- SELECTION FEATURE 48-10
- MYSTIC LINES FEATURE 81-7
- RED MULTIPLE FEATURE 41-11
- YELLOW MULTIPLE FEATURE 38-17
- BLUE MULTIPLE FEATURE 43-11
- GREEN MULTIPLE FEATURE 45-11

Scores & Features advance circuit after 2-3 Star Zone Winner for a Red Letter Game ("R" Button). Diag. B-55 to B-60

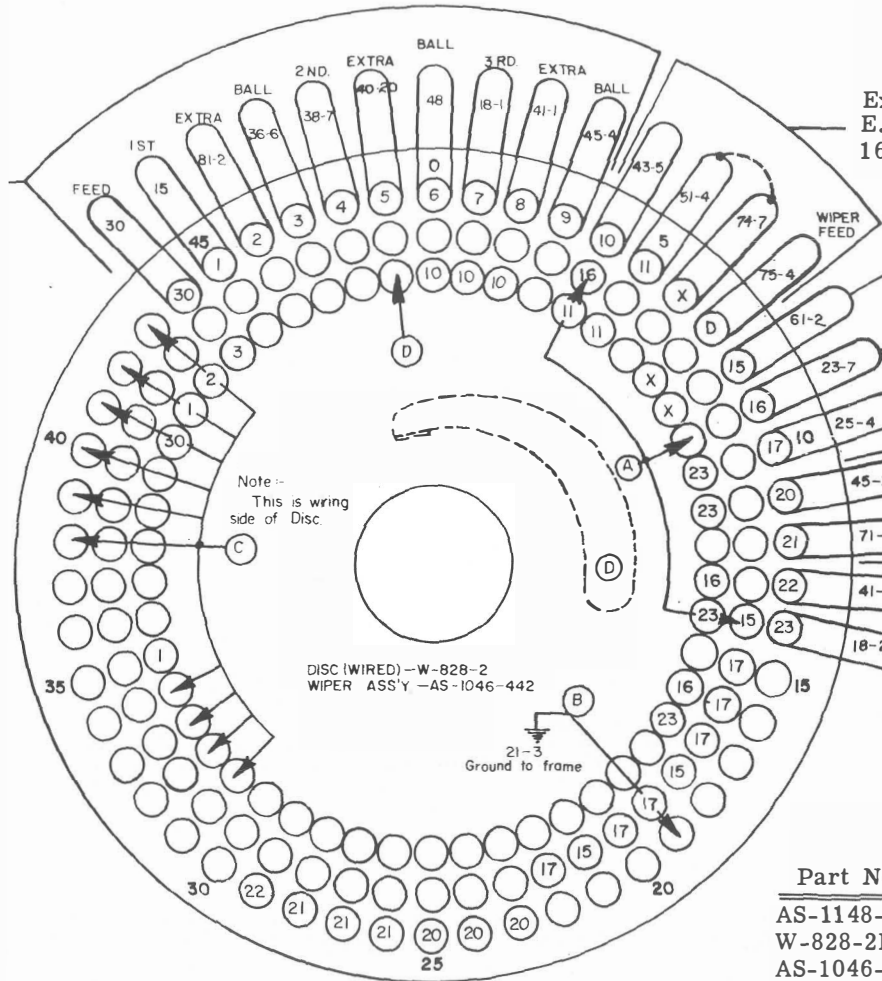


**RED LETTER UNIT DISC**  
 29 Step Unit. Wipers Shown in Reset Position



10 Step Unit. Wipers Shown in Reset Position

Thru Wipers C, Extra Ball Lites. Diag. H-14



Extra Ball Step-Up Circuit thru Spotting Disc, E.B Adj. Plug, Mixer #4 Disc & Mixer & Spotting 16 Pulse Cam B. E. B Disc Wiper D. Diag. C-25

Guaranteed 1 Extra Ball Circuit thru Control Unit Cam 8A to E. B. Step-Up Wipers A, Diag. Guaranteed 1 Extra Ball Circuit thru Control Unit Cam 8A to E. B. Step-Up Wiper A, Diag. B-25.

1 Extra Ball Circuit thru Reflex Unit & Control Unit Cam 5A to E. B. Step-Up. Wiper A, Diag. A-25

Ball Lifter Motor & Ball Detect Relay Circuit for Extra Balls thru Wiper B. (Check Trough Sw.'s). Diag. G-13

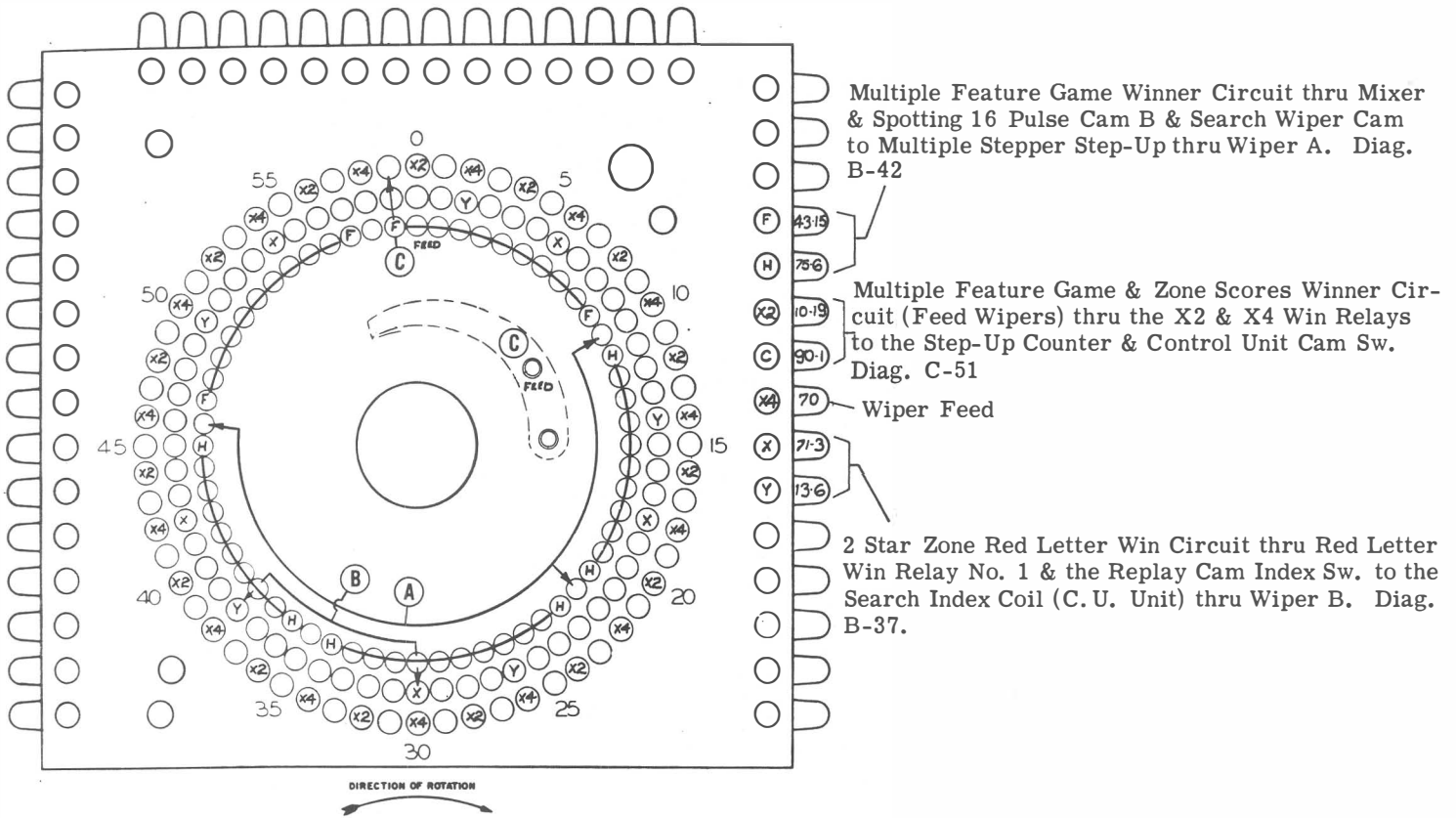
Circuit to Ball Detect Relay. Diag. A-13

Extra Ball Step-Up Circuit thru Reflex Unit. Diag. D-26

Part No.	Description
AS-1148-31	Extra Ball Unit (complete)
W-828-2B	Contact Plate Disc (wired)
AS-1046-442A	Wiper Assembly
C-1050-10A	Ratchet & Shaft
B-25-925	Step-Up Coil
C-28-1100	Reset Coil
A-1765-4A	Step-Up Arm

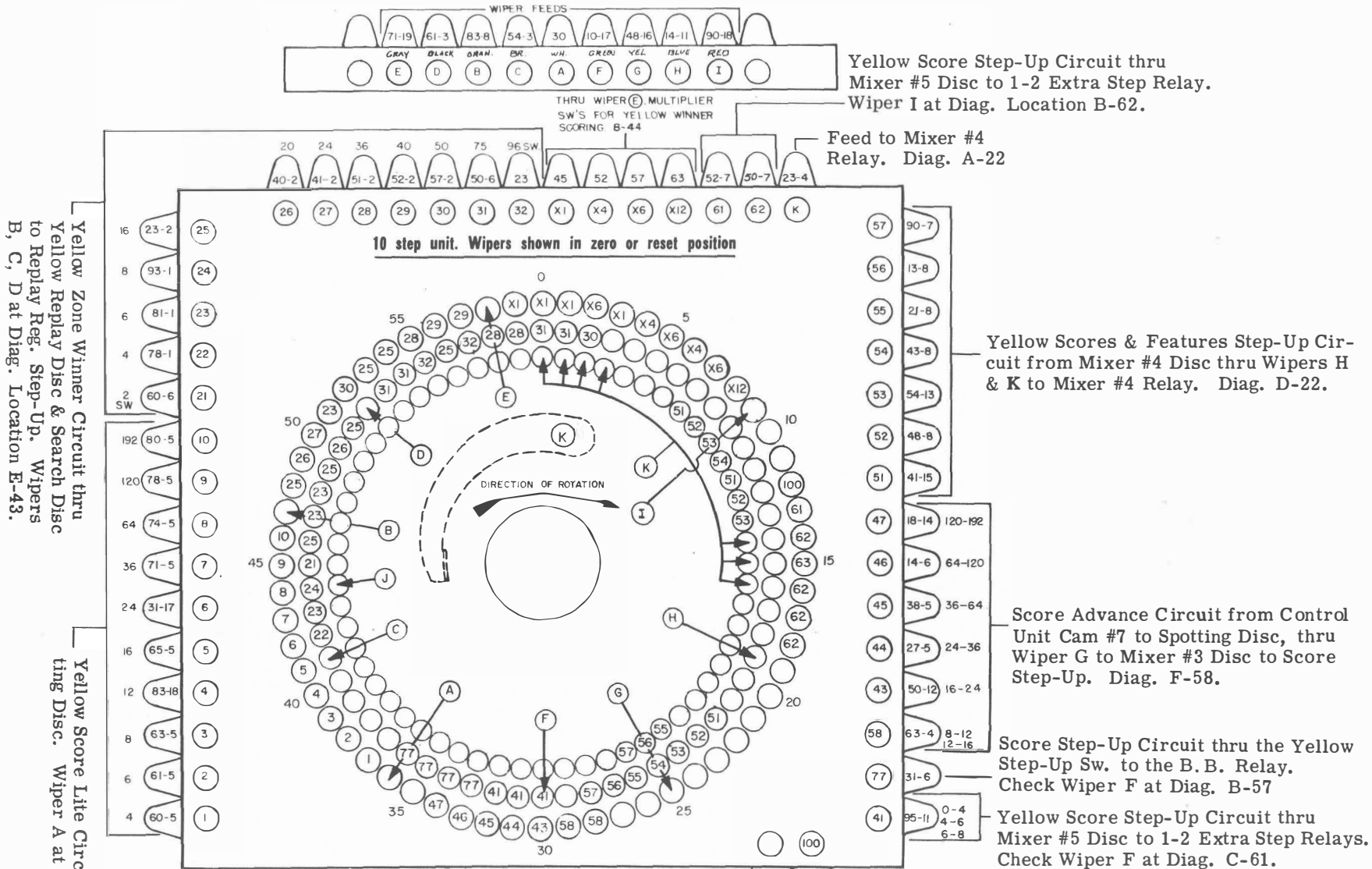
**EXTRA BALL UNIT DISC**

# MULTIPLIER UNIT DISC



## Continuous Step Unit

Part No.	Description
AS-827-484	Multiplier Unit (Complete)
W-1064-2B	Contact Plate (Wired)
AS-1046-676A	Wiper Assembly
C-1060A	Ratchet & Shaft
B-25-925	Step-Up Coil
A-1765-19A	Step-Up Arm



Yellow Zone Winner Circuit thru Yellow Replay Disc & Search Disc to Replay Reg. Step-Up. Wipers B, C, D at Diag. Location E-43.

Yellow Score Lite Circuit thru Spotting Disc. Wiper A at Diag. H-21

Yellow Score Step-Up Circuit thru Mixer #5 Disc to 1-2 Extra Step Relay. Wiper I at Diag. Location B-62.

Feed to Mixer #4 Relay. Diag. A-22

Yellow Scores & Features Step-Up Circuit from Mixer #4 Disc thru Wipers H & K to Mixer #4 Relay. Diag. D-22.

Score Advance Circuit from Control Unit Cam #7 to Spotting Disc, thru Wiper G to Mixer #3 Disc to Score Step-Up. Diag. F-58.

Score Step-Up Circuit thru the Yellow Step-Up Sw. to the B.B. Relay. Check Wiper F at Diag. B-57

Yellow Score Step-Up Circuit thru Mixer #5 Disc to 1-2 Extra Step Relays. Check Wiper F at Diag. C-61.

Yellow Score Step-Up Circuit to 1-2 Extra Step Relay thru Mixer #5 Disc. Check Wiper I at Diag. B-61

Part No.	Description
AS-1022-135	Yellow Score Unit (Complete)
W-848-13B	Contact Plate Disc (Wired)
AS-1046-678B	Wiper Assembly
C-1060-10-48	Ratchet & Shaft
B-25-925	Step-Up Coil
C-28-1100	Reset Coil
A-1765-14A	Step-Up Arm

**YELLOW SCORE UNIT DISC**  
VIEWED FROM WIRING SIDE

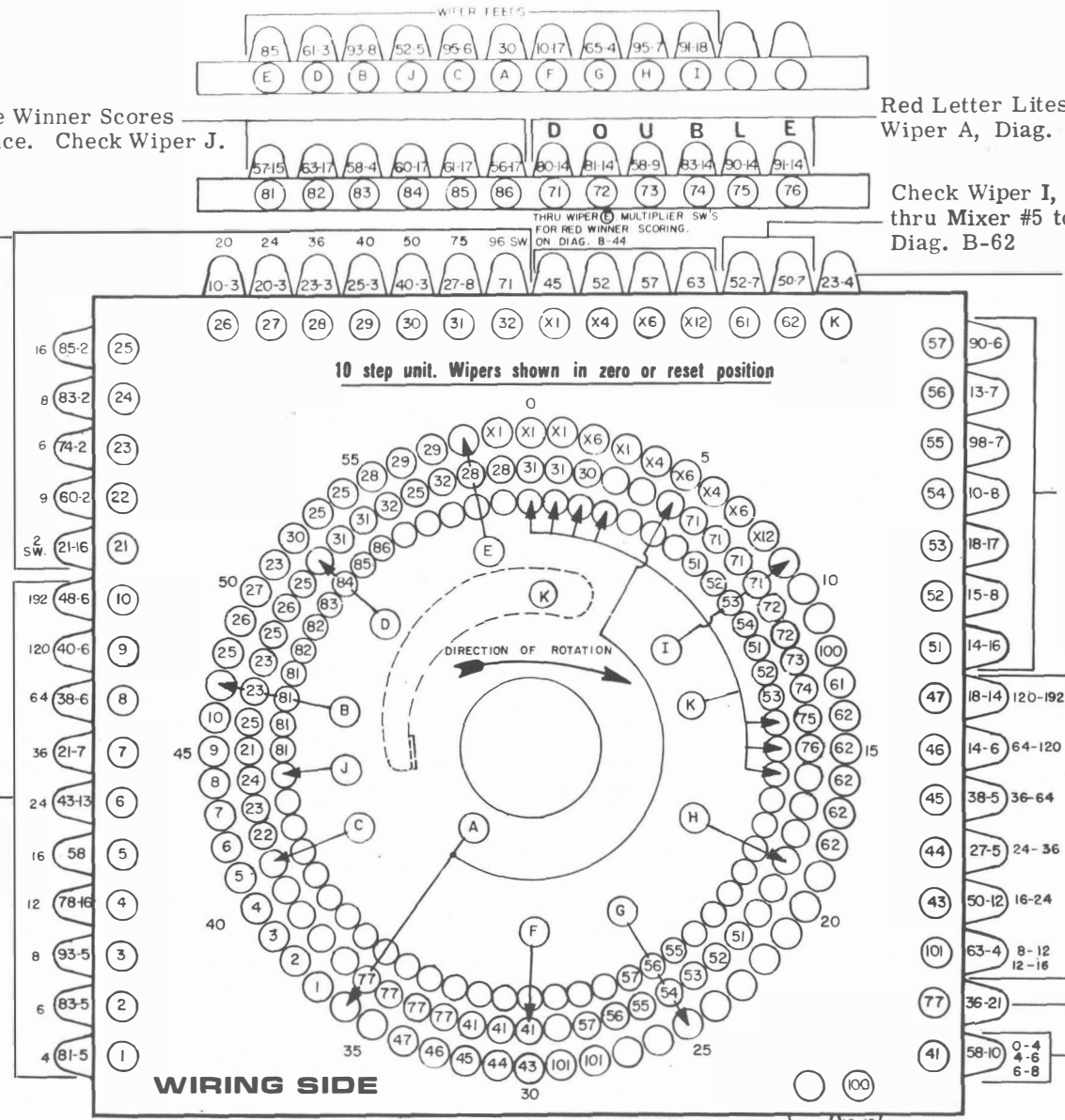
Red Letter Game Winner Scores  
& Features Advance. Check Wiper J.  
Diag. F-24

Red Letter Lites  
Wiper A, Diag. H-32

Check Wiper I, Red Zone Scores Step-Up  
thru Mixer #5 to 1-2 Extra Step Relays.  
Diag. B-62

Red Zone Winners Circuit thru Red  
Replay Unit Disc to Replay Reg. Check  
Wipers B, C, & D at Diag. E-45.

Red Score Lite Circuit thru  
Wipers A. Diag. H-23



Wipers Feed

Red Scores & Features Step-Up Circuit  
from Mixer #4 Disc thru Wipers H & K  
to Mixer #4 Relay. Diag. C-23.

Score Advance Circuit from CU Cam #7  
to Spotting Disc - thru Wiper G to Mixer  
#3 Disc to Score Step-Up. Diag. F-58

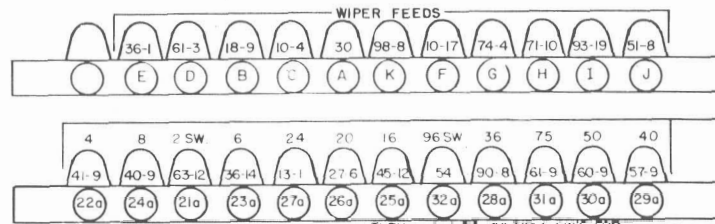
Score Step-Up Circuit thru the Red  
Step-Up Sw. to the B. B. Step Relay.  
Check Wiper F at Diag. B-59

Red Score Step-Up Circuit thru Mixer  
#5 Disc to 1-2 Extra Step Relays.  
Check Wiper F at Diag. C-63.

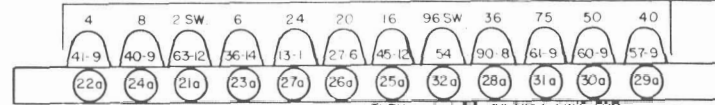
Red Score Step-Up Circuit to 1-2  
Extra Step Relay thru Mixer #5  
Disc. Check Wiper I at Diag. B-61.

**RED SCORE UNIT DISC**

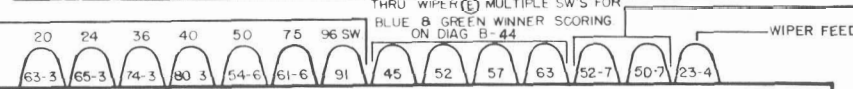
Part No.	Description
AS-1022-104	Red Score Unit
W-845-9B	Contact Plate (wired)
AS-1046-475B	Wiper Assembly
C-1060-10-47	Ratchet & Shaft
C-28-1100	Reset Coil
B-25-925	Step-Up Coil
A-1765-14A	Step-Up Arm



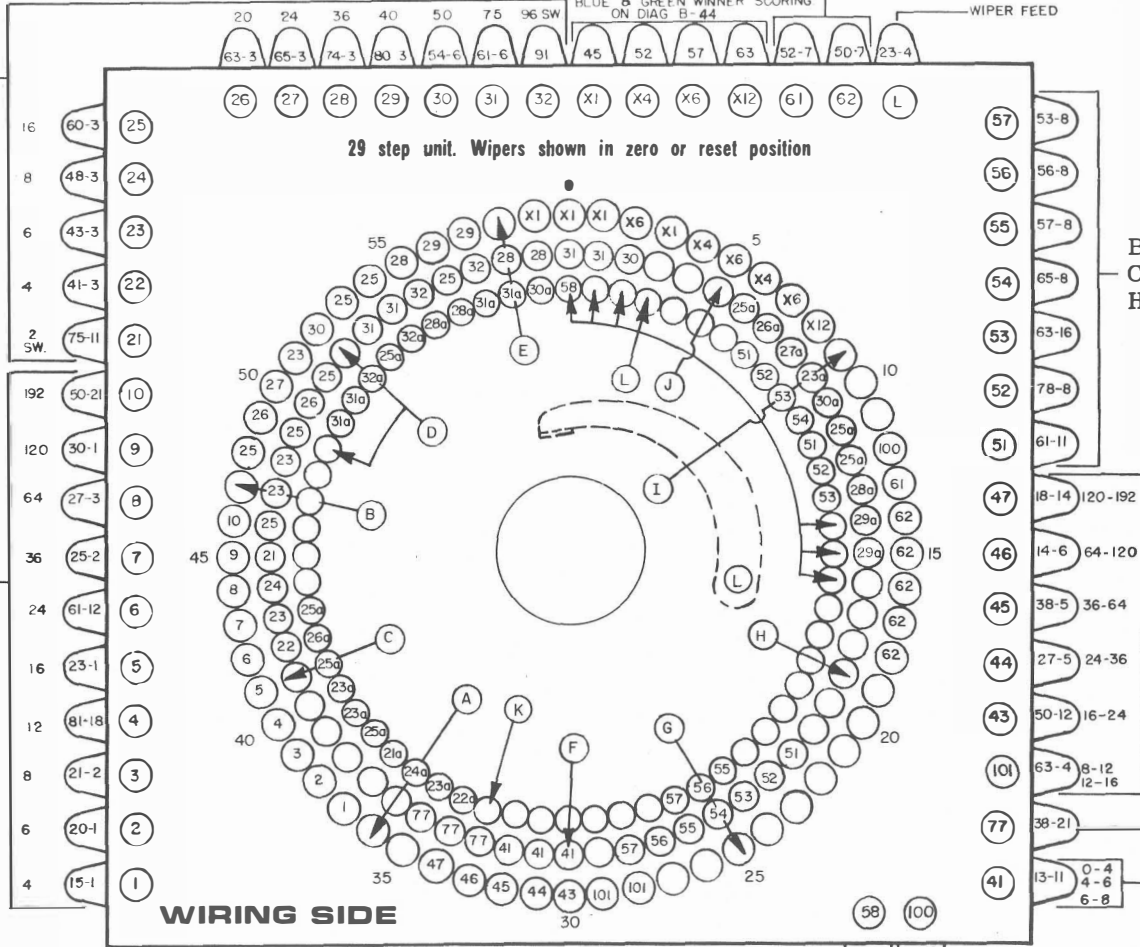
Green Zone Winners Circuit thru Green Replay Unit Disc to Replay Reg. Check Wipers D, J & K at Diag. E-49.



Blue & Green Scores Step-Up Circuit thru Mixer #5 Disc to 1-2 Extra Step Relay. Check Wiper I at Diag. B-62.



Blue Zone Winners Circuit thru Blue Replay Unit Disc to Replay Reg. Check Wipers B, C & D at Diag. E-47.



Blue & Green Scores & Features Step-Up Circuit from Mixer #4 Disc thru Wipers H & L to Mixer #4 Relay. Diag. C-20

Scores Advance Circuit from C. U. Cam #7 to Spotting Disc. thru Wiper G to Mixer #3 Disc & Score Step-Up Diag. F-60.

Score Step-Up Circuit to B. B. Relay Check Wiper F at Diag. B-61

Blue & Green Scores & Features Step-Up Circuit thru Wiper F

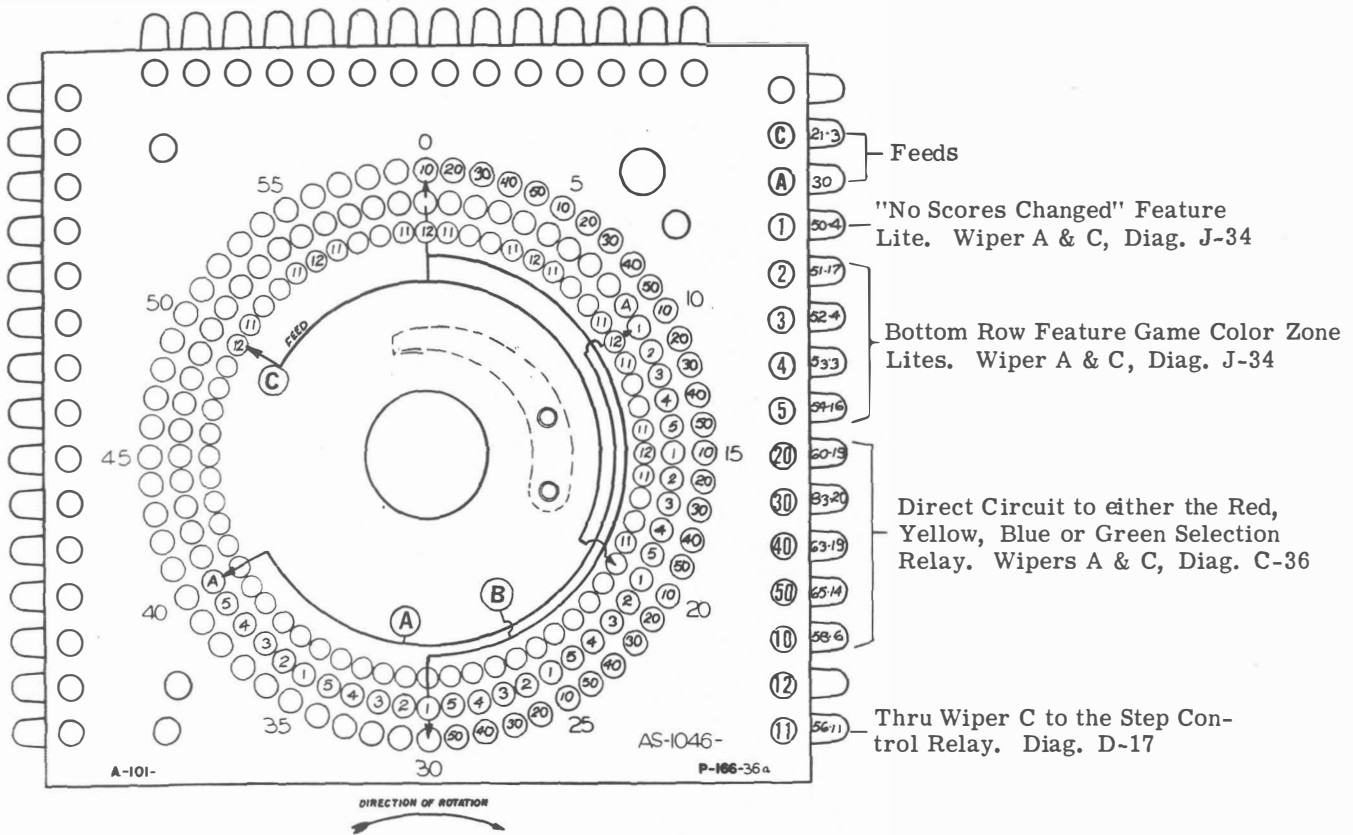
Blue & Green Step-Up Circuit to 1-2 Extra Step Relay thru Mixer #5 Disc. Check Wiper I at Diag. B-65.

Direct Feed to Mixer #4 Relay thru Wiper L. Diag. D-20.

Part No.	Description
AS-1022-105 . . .	Blue-Green Score Unit (Complete)
W-1055-2B . . .	Contact Plate Disc (Wired)
AS-1046-580B . . .	Wiper Assembly
C-1060-10-47 . . .	Ratchet & Shaft
C-28-110 . . . . .	Reset Coil
B-25-925 . . . . .	Step-Up Coil
A-1765-14A . . . . .	Step-Up Arm

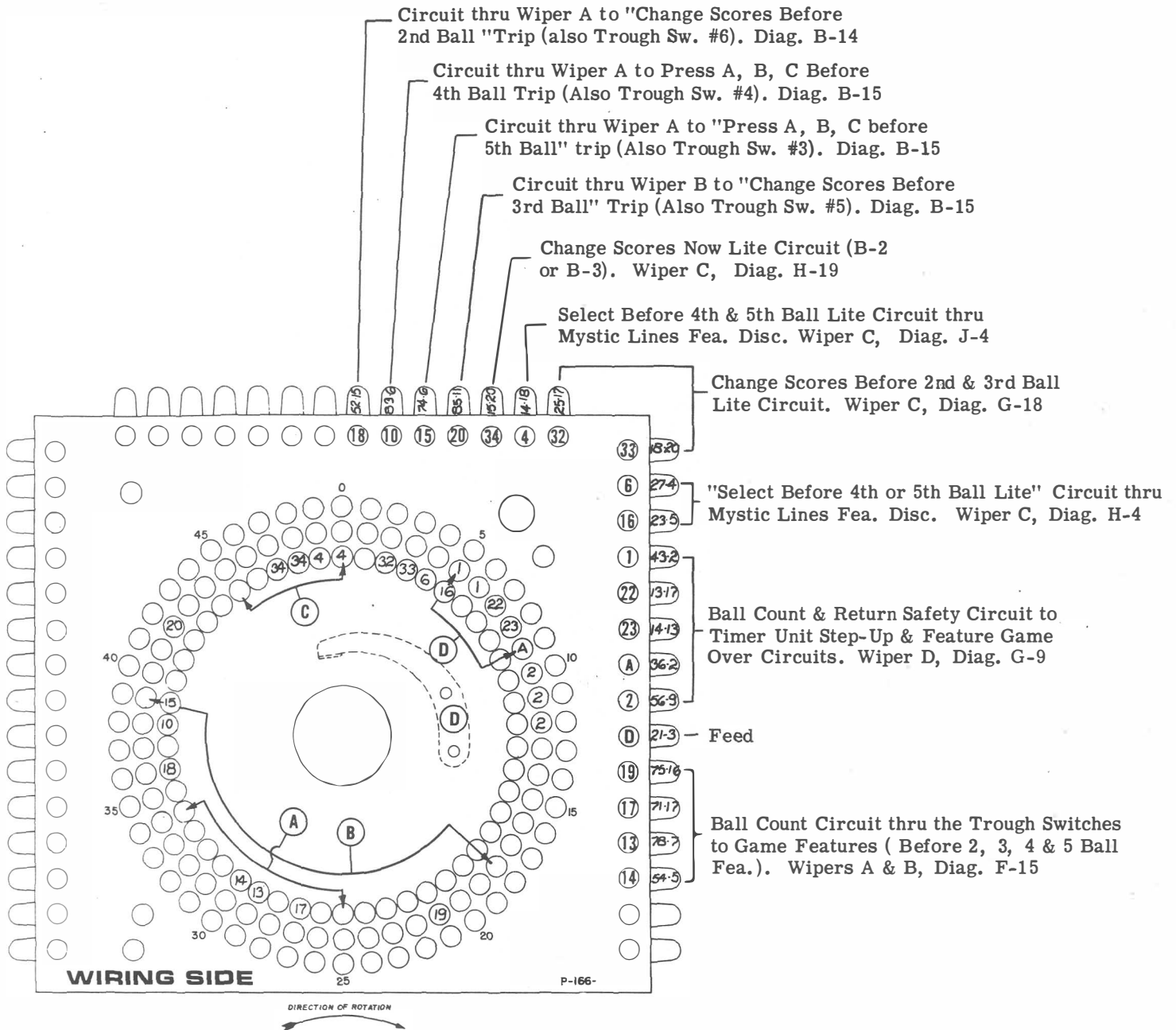
# DOUBLE FEA. SEL. UNIT DISC

Continuous Stepper



Part No.	Description
AS-827-481	Double Fea. Sel. Unit (complete)
W-1086-5B	Contact Plate Disc (wired)
AS-1046-675A	Wiper Assembly
B-25-925	Step-Up Coil
A-1765-19A	Step-Up Arm

# TIMER UNIT DISC

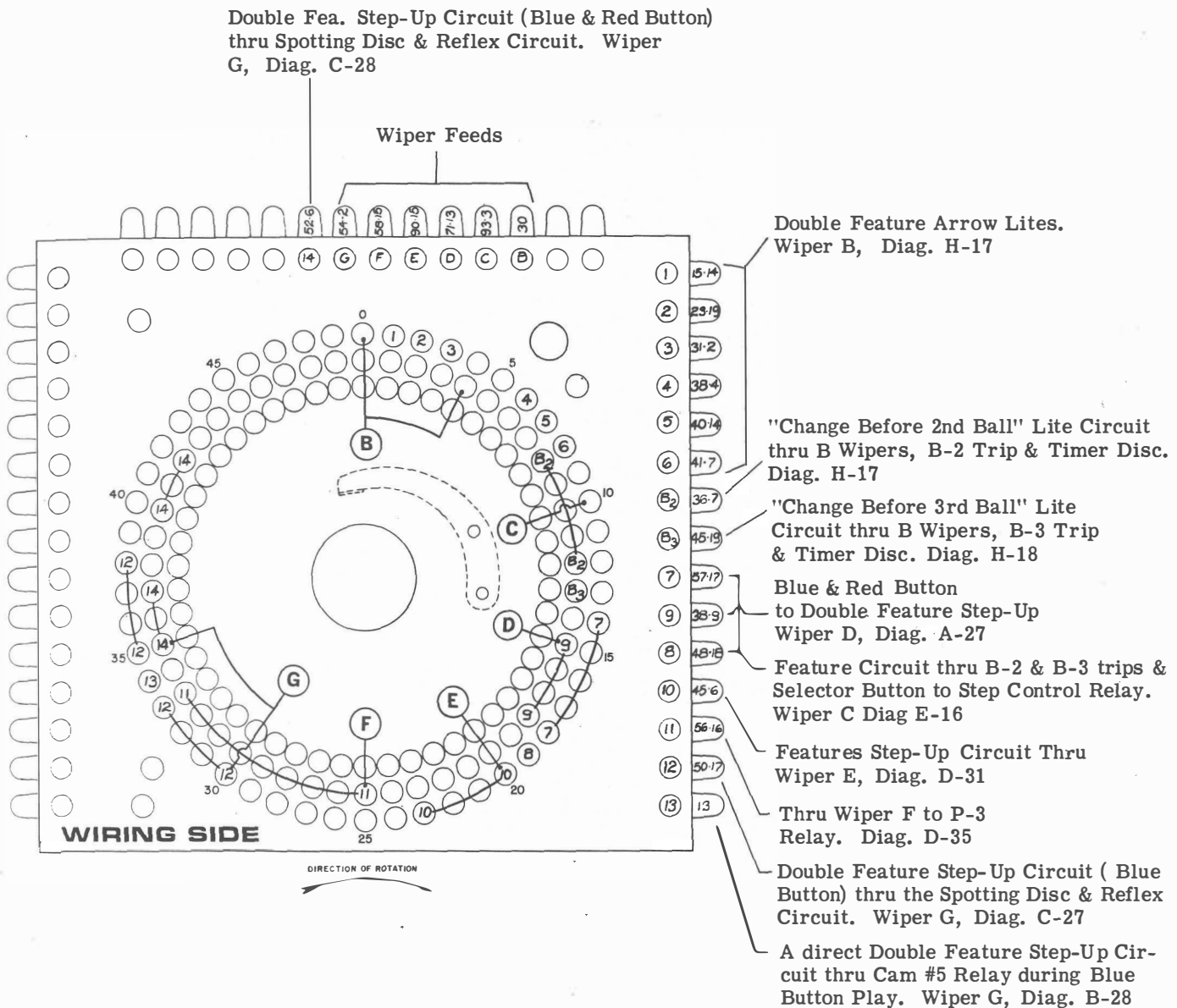


8 Step Unit. Wipers Shown in a Reset Position

Part No.	Description
AS-1110-48	Timer Unit (Complete)
W-844-7B	Contact Plate (Wired)
AS-1046-673A	Wiper Assembly
C-1050-8-43	Ratchet & Shaft
C-28-1100	Reset Coil
B-25-925	Step-Up Coil
A-1765-4A	Step-Up Arm

# DOUBLE FEAT. 2X 4X UNIT DISC

9 Step Unit. Wipers Shown in a Reset Position



Part No.	Description
AS-1022-136	Double Feature Stepper (Complete)
W-1086-6B	Contact Plate Disc (Wired)
AS-1046-692B	Wiper Assembly
C-1050-9	Ratchet & Shaft
C-28-1100	Reset Coil
B-25-925	Step-Up Coil
A-1765-4A	Step-Up Arm Assembly

Wiper Locator	
Wiper No.	Wire Color
B	Red
C	Blue
D	Yellow
E	Green
F	White
G	Brown



# BACK CAB. RELAY BANK - 4

Relay Switches read from Right Side bottom to top  
- then Left Side Bottom to top.

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
REPLAY - RESET RELAY COIL	G-31-1800	A-4	75-2 70	Orange-White Orange	Energized by an Anti-Cheat Relay Circuit thru Replay Reg. Unit Zero Sw.
1 R. N.O.	ASW-R1-3A	F-3	56-2 75-2	White-Brown Orange-White	Completes lock-in circuit to this Relay & Mult. Reset circuit to Replay Reg.
2 R. N.O.	ASW-R1-3A	F-1	20P 60P	Blue Brown	Completes a circuit to the Control Unit & Mixer Unit Motors.
3 R. N.C.	ASW-R2-4A	F-39	30 93-20	Yellow Gray-Yellow	Opens Kumbac Key Circuit to step Replay Reg. & Key Play Meter.
4 R. N.C.	ASW-R2-4A	D-4	10-5 61-8	Red Brown-Red	Opens Start Relay Circuit.
1 L. T.	ASW-R3-4A	B-3	90-5 98-5 53-7	Gray Gray-Black White-Yellow	Directs Single Play Reset Cir. or Mult. Play (Cancel) Reset Cir. to Replay Reg.
START RELAY COIL	G-30-1500	A-4	98-20 70	Grey-Black Orange	Energized thru Coin Sw. Circuit & also thru Red, Blue or Yellow Play Button Cir. when replays are on Register.
1 R. N.O.	ASW-R1-8A	D-6	13-16 48-2	Red-Yellow Green-Black	Completes a circuit to this Relay, the Mixer Latch Coil, Shutter Motor & Timer Cams Index Coil.
2 R. N.O.	ASW-R1-3A	C-6	13-16 10-10	Red-Yellow Red	Completes a circuit to Mixer Latch Coil, Timer Cams Index Coil & Shutter Motor.
3 R. N.C.	ASW-R2-4A	A-24	75-4 78	Orange Orange-Black	Opens an Extra B 11 Circuit to E. B. Step-Up Coil.
4 R. N.C.	ASW-R2-4A	D-30	18-16 95-9	Red-Black Grey-White	Opens Features Step-Up Circuit thru Control Unit.
1 L. N.C.	ASW-R2-4A	D-52	56-4 38-15	White-Brown Yellow-Black	Opens any 2 Stars Red Letter Win Circuit.
2 L. N.C.	ASW-R2-4A	B-19	21-3 14-9	Blue-Red Red-Green	Opens a Scores Step-Up Circuit to Mixer Cam #2 Relay.
MULTIPLAY RELAY COIL (Optional)	G-32-2500	A-7	70 15-13	Orange Red-White	Energized thru the coin sw. circuit.
1 L. N.O.	ASW-R1-8A	F-8	25-9 15-13	Blue-White Red-White	Completes circuit to this Relay Coil thru Control Unit Cam 2B.
2 L. N.O.	ASW-R1-3A	E-6	10-5 27-9	Red Blue-Orange	Completes a circuit to Start Relay from Coin Sw.
3 L. N.C.	ASW-R2-4A	B-3	45-9 98-5	Green-White Grey-Black	Opens the Replay Reg. Reset Circuit
4 L. T.	ASW-R3-4A	B-38	41-14 75-9 36-13	Green-Red Orange-White Yellow-Brown	Directs a winner/coin credit circuit to Replay Reg. Step-Up.
ANTI-CHEAT RELAY COIL	G-32-2500	A-26	70 78-4	Orange Orange-Black	Energized by Control Unit Cam 5B during play cycle. Also energ. thru Kumbac Key Circuit.
1 R. N.O.	ASW-R1-8A	B-26	30 78-4	Yellow Orange-Black	Completes circuit to this Relay Coil.
2 R. N.O.	ASW-R1-3A	H-40	51-7 80-1	White-Red Black	Completes 6 V. Circuit to Game Hole/Scoreboard Lites.
3 R. N.C.	ASW-R2-4A	F-7	14-14 30	Red-Green Yellow	Closes Playfield Shutter when turning game on.
4 R. N.C.	ASW-R2-4A	E-12	57-6 85-7	White-Orange Black-White	Opens a circuit to the Red Button Relay.
1 L. T.	ASW-R3-4A	F-4	75-2 56-2 50-2	Orange-White White-Brown White	Opens Replay Play Buttons Circuit to Start Relay & completes circuit to Replay Reset when this Relay drops out out tilted.
2 L. T.	ASW-R3-4A	J-29	91-2 36-17 40	Grey-Red Yellow-Brown Green	Opens 6 V. Game Lites Circuit & completes circuit to Tilt Lite when this Relay drops out (tilted).

# AUX. BOARD UNITS & RELAYS

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Colors	Function
ALL 4 STARS REPLAY COUNTER MAGNET COIL	EA-30-1150	A-41	70 27-17	Orange Blue-Orange	Energized thru C. U. Search Disc Winner Circuit after 4 balls in Star Zone is achieved (when Feature is Lit).
TOP N. C. Open at 50	ASW-C1-6A	D-41	83-13 23-14	Black-Yellow Blue-Yellow	Opens #4 Winner Search Relay Circuit to Search Disc (open at 50)
BOTTOM N. C. Outside Open a at 75	ASW-C1-24A	D-41	98-18 23-14	Gray-Black Blue-Yellow	Opens #4 Winner Search Relay Circuit to Search Disc (open at 75)
BOTTOM N.O. Inside	ASW-C1-7A	A-41	80-16 27-17	Black Blue-Orange	Completes Homing Circuit to this Units Coil.
X4 PULSE Relay Coil	G-33-2800	B-51	70 13-15	Orange Red-Yellow	Energized thru the Multiple Winner Control Unit Cam Sw.'s J1 (X-12), L1 (12 Pulse) & M1 (X-4) see C. U. illust.
1. N. O.	ASW-R1X-3A	B-42	65-11 75-6	Brown-White Orange-White	Completes a winner circuit to the Multi. Stepper Step-Up Coil (Fea. Game).
X2 PULSE	G-33-2800	B-51	13-15 90-1	Red-Yellow Grey	Same as X4 Pulse Coil above.
1. N. O.	ASW-R1X-3A	A-42	65-11 75-6	Brown-White Orange-White	Completes a winner circuit to the Multi. Stepper Step-Up Coil (Fea. Game).
2nd EXTRA Step Relay Coil	G-32-2500	A-66	71-13 45-16	Orange-Red Green-White	Energized thru the Color Zone Score Step-Up Circuit. Score Disc's & Mixer No. 3 & 5 Discs & Cam #7 Re. (Back Door) - also B. B. Relay (Blue Button).
1. N. O.	ASW-R1-8A	A-66	36-16 45-16	Yellow-Brown Green-White	Completes a Hold-In Circuit to energize the 2 Extra Step Relay Coil.
2. N. O.	ASW-R1-3A	F-56	81-11 25-16	Black-Red Blue-White	Allows 2 extra steps on Scores Step-Up.
1st EXTRA Step Relay Coil.	ASW-R1-8A	A-62	36-16 31-5	Yellow-Brown Yellow-Red	Completes a hold-in circuit to this Relay Coil.
1. N. O.	ASW-R1-8A	A-62	36-16 31-5	Yellow-Brown Yellow-Red	Completes a hold-in circuit to this Relay Coil.
2. N. O.	ASW-R1-3A	E-56	81-11 60-18	Black-Red Brown	Allows 1 Extra Step on Scores Step-Up

Relay Switch No. 's start at Bottom of Switch Stack

# BACK DOOR 7 RELAY BANK - TOP

Note: This Relay Coil & Switch Chart reads from Left Side of Relay Bank to Right Side. Switch Stacks read from Bottom of Rear Stack (Door side) to Top, then Bottom of Front Stack to Top. Rear Stack Denoted by "R", Single Center Stack by "C", & Front Stack by "F".

Complete Unit: E-300 - 641B (Mounted)

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
SCORES LOCK RELAY COIL	G-32-2500	A-54	31-15 93-14	Yellow-Red Gray-Yellow	Energized by Blue Button Play thru Scores Relay Circuit.
1 R. N.O.	ASW-R1-8A	B-54	40-15 93-14	Green Gray-Yellow	Completes Lock-In Circuit to this Coil.
2 R. N.O.	ASW-R1-3A	E-58	38-5 65-16	Yellow-Black Brown-White	Completes a circuit from the Spotting Disc to #36 on Score Discs Step-Up & Multiple Score Fea. Relays.
3 R. N.O.	ASW-R1-3A	B-28	51-16 50-17	White-Red White	Completes a Score Step-Up Circuit from Spotting Disc to Step Double Fea. Unit Disc thru Play Fea. Relay (Selector Button)
4 R. N.O.	ASW-R1-3A	E-58	18-14 31-18	Red-Black Yellow-Red	Completes a circuit from the Spotting Disc to #120 on Score Discs Step-Up & Mult. Score fea. Relays.
1 F. N.O.	ASW-R1-3A	E-58	58-11 14-6	White-Black Red-Green	Completes a circuit from the Spotting Disc to #64 on Score Disc Step-Up & Mult. Score Fea. Relays.
2 F. N.O.	ASW-R1-3A	F-56	81-11 53-15	Black-Red White-Yellow	Completes a Control Unit (odds) Circuit to Mixer #3 Disc for color zone steps.
3 F. N.C.	ASW-R2-4A	E-31	80-8 85-12	Black Black-White	Cuts off Mystic Lines & Sel. Feature Steps during -- Blue Button Play.
4 F. T.	ASW-R3-4A	A-61	52-7 10-12 15-9	White-Blue Red Red-White	Directs Color Zone Step Circuits to either 1 Extra Step Re. or 2 Extra Step Re. (deleted 5/10/72).
PLAY SCORES RELAY COIL	G-32-2500	A-55	31-15 85-15	Yellow-Red Black-White	Energized by Blue Button thru C. U. Cam Sw. C-3 for Color Zone Score Step-Up's via "Open at Zero" Sw. on Yellow Score Unit.
1 R. N.O.	ASW-R1-8A	B-55	57-13 85-15	White-Orange Black-White	Completes a Lock-In Circuit to this Relay.
2 R. N.O.	ASW-R1-3A	B-56	10-17 20-6	Red Blue	Completes a direct color zone scores step-up thru Mixer #2 Relay action.
3 R. N.O.	ASW-R1-3A	B-54	43-14 93-14	Green-Yellow Gray-Yellow	Completes circuit to energize Scores Lock Relay during Blue Button Play.
4 R. N.C.	ASW-R2-4A	H-8	56-15 31-16	White-Brown Yellow-Red	Cuts-Off all Feature Step-Up Circuits to Backglass Fea. Lites during Blue Button Play.
1 F. T.	ASW-R3-4A	H-31	25-15 95-2 21-15	Blue-White Gray-White Blue-Red	Directs circuit to "Scores" Lites & double fea. game during Blue Button Play.
2 F. T.	ASW-R3-4A	E-22	36-4 27-7	Yellow-Brown Blue-Orange	Score Step-Up Control Circuit thru Mixer #2 Disc & Mixer #2 Relay.
FEATURES LOCK RELAY COIL	G-33-2800	A-54	31-15 53-14	Yellow-Red White-Yellow	Energized thru Green Button Play thru Play Feature Re. & Cam #7 Re.
1 C. N.O.	ASW-R2-4A	B-54	40-15 53-14	Green White-Yellow	Completes Lock-In Circuit to this Relay Coil.
2 C. N.C.	ASW-R3-4A	E-20	52-17 41-17	White-Blue Green-Red	Opens a Circuit thru Score Discs & Mixer #4 Relay affecting Fea. Steps.
PLAY FEATURES RELAY COIL	G-32-2500	A-54	31-15 61-13	Yellow-Red Brown-Red	Energized by Green Button Play thru C.U. Cam Sw. C-2 & "The Open at Zero Sw." on Yellow Score Unit.
1 R. N.O.	ASW-R1-8A	B-54	81-13 61-13	Black-Red Brown-Red	Completes a lock-in circuit to this Relay Coil.

# BACK DOOR 7 RELAY BANK - TOP

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
2 R. N. O.	ASW-R1-3A	B-54	43-14 53-14	Green-Yellow White-Yellow	Completes Circuit to Features Lock Relay.
3 R. N. O.	ASW-R1-3A	C-31	45-6 90-13	Green-White Gray	Completes a Spotting Disc Control Circuit to Reg. Feature Step-Up thru Sel. Feature Unit & Mystic Lines Unit.
4 R. N. C.	ASW-R2-4A	A-26	70 38-9	Orange Yellow-Black	Cuts off circuit to Selector Button, Double Fea. Step-Up & Scores Step-Up.
1 F. N. C.	ASW-R2-4A	G-12	74-15 15-17	Orange-Green Red-White	Cuts off circuits to Double Feature Game & Score Lites during Green Button Play.
2 F. T.	ASW-R3-4A	H-31	95-2 36-15 23-15	Grey-White Yellow-Brown Blue-Yellow	Directs circuit to "Play Features Lite" during Green Button Play
MIXER #4 Relay Coil Resistor: 23-4 to Mixer #2 Sw. 1F.	G-32-2500	A-22	70 23-4	Orange Blue-Yellow	Energized thru Scores Discs for Feature Odds Control during Green/Red Button Step-Up Play.
1 C. N. O.	ASW-R1-8A	A-19	18-7 23-4	Red-Black Blue-Yellow	Completes a Lock-In Circuit to this Relay Coil.
2 C. N. C.	ASW-R2-4A	D-26	36-19 51-5	Yellow-Brown White-Red	Cuts off a Control Circuit to the Extra Ball Unit Step-Up.
3 C. N. C.	ASW-R2-4A	D-29	43-16 83-9	Green-Yellow Black-Yellow	Cuts-off all Reg. Feature Step-Ups & Control Circuit to Double Fea. Game.
MIXER #2 Relay Coil Resistor: 27-7 to Sw. 1 F.	G-32-2500	A-24	70 27-7	Orange Blue-Orange	Energized thru Mystic Lines Fea. Disc & Selec. Fea. Disc for Zone Scores Odds Control during Blue/Red Button Step-Up Play.
1 R. N. O.	ASW-R1-8A	D-23	13-3 27-7	Red-Yellow Blue-Orange	Completes a Lock-In Circuit to this Relay Coil.
2 R. N. O.	ASW-R1-3A	C-56	85-4 54-12	Black-White White-Green	Completes a circuit to Color Zone Score Steps.
3 R. N. O.	ASW-R1-3A	E-27	56-6 75-5	White-Brown Orange-White	Completes a Control Circuit thru Reflex Unit to all Scores & Features.
4 R. N. O.	ASW-R1-3A	D-29	80-8 14-7	Black Red-Green	Completes a Control Circuit thru Reflex Unit to Double Fea. Game Step-Up.
1 F. Connector to 2 Resistors: Wire No.'s 23-4 & 27-7	ASW-ROA	-	21-3	Blue-Red	
MIXER CAM #3 Relay Coil	G-32-2500	A-19	70 93-11	Orange Gray-Yellow	Energized thru Control Unit Sw. "T1"
1 C. N. O.	ASW-R1-8A	A-19	14-9 93-11	Red-Green Gray-Yellow	Completes a Lock-In Circuit to this Coil.
2 C. N. O.	ASW-R1-3A	A-61	31-5 15-9	Yellow-Red Red-White	Completes a circuit to the 1 Extra Step Relay for color zone score advance.
3 C. T.	ASW-R3-4A	D-55	25-11 18-8 27-11	Blue-White Red-Black Blue-Orange	Directs a Color Zone Score Step-Up Circuit to the Double Trips thru Mixer #3 Disc for a 300/600 Star Zone Fea. Game.

# BACK DOOR 7 RELAY BANK - BOTTOM

Note: This Relay Coil & Switch Chart reads from Left Side of Relay Bank to Right Side. Switch Stacks read from Bottom of Rear Stack (door side) to Top, then Bottom of Front Stack to Top. Rear Stack denoted by "R", single Center Stack by "C" & Front Stack by "F"

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
RED BUTTON Relay Coil	G-33-2800	A-12	85-7 91-15	Black-White Gray-Red	Energized thru Red Button Switch (start game) & also Tilt Trip Sw. (Trip Bank) Circuit.
1 R. N.O.	ASW-R1-8A	E-11	57-6 20-2	White-Orange Blue	Completes lock-in circuit to this Relay Coil
2 R. T.	ASW-R3-4A	B-7	45-18 98-2 53-5	Green-White Gray-Black White-Yellow	Directs Timer Cams Index Coil Circuit & Mixer Latch Coil Circuit during Ex. Ball Play to Shutter Motor Reset & Start Re. (Red Start Button) following E. B. Play.
3 R. T.	ASW-R3-4A	G-31	23-6 30 36-15	Blue-Yellow Yellow Yellow-Brown	Directs Extra Ball Lite Circuit to Scores & Feature Step-Up Lites during Red Button Play
RED LETTER #2 Relay Coil	G-32-2500		70 56-4	Orange White-Brown	Energized via a Red Letter Win with Any 2-3 in a Star Zone - thru "R" Button Play for next game action.
1 R. N.O.	ASW-R1-8A	F-52	38-15 63-8	Yellow-Black Brown-Yellow	Completes Hold-In Circuit to this Relay Coil.
2 R. N.O.	ASW-R1-3A	B-8	21-3 91-11	Blue-Red Gray-Red	Completes a circuit to Game Reset System.
3 R. N.C.	ASW-R2-4A	A-67	85-5 15-4	Black-White Red-White	Opens Reset Coil Circuit to Red Score Unit.
4 R. N.C.	ASW-R2-4A	B-58	58-10 52-19	White-Black White-Blue	Opens a circuit to the Red Score Step-Up Coil.
1 F. N.C.	ASW-R2-4A	D-37	80 60	Black Brown	Opens a circuit to the Replay Cams Index Coil.
2 F. N.C.	ASW-R2-4A	A-30	48-10 98-9	Green-Black Gray-Black	Opens a circuit to the Selection Feature Step-Up.
RED LETTER #1 Relay Coil	G-32-2500	A-52	70 56-4	Orange White-Brown	Same as Red Letter #2 Coil.
1 R. N.O.	ASW-R1-3A	G-6	30 10-11	Yellow Red	Completes a circuit to Select Before & After 4-5 Ball Lites
2 R. N.O.	ASW-R1-3A	E-23	25-18 40-18	Blue-White Green	Completes a Red Letter Fea. Win to step all Scores & Features for a new game ("R" Button).
3 R. N.C.	ASW-R2-4A	B-57	54-14 95-11	White-Green Gray-White	Opens a circuit to the Yellow Score Step-Up Coil.
4 R. N.C.	ASW-R2-4A	B-60	14-15 13-11	Red-Green Red-Yellow	Opens a Circuit to the Blue & Green Score Step-Up Coil.
1 F. N.C.	ASW-R2-4A	E-29	43-16 61-15	Green-Yellow Brown-Red	Opens the control circuit to Mystic Lines & Selection Fea. Step-Ups.
2 F. N.C.	ASW-R2-4A	B-29	93-12 81-7	Gray-Yellow Black-Red	Opens a direct circuit to Mystic Lines Step-Up Coil.
3 F. N.C.	ASW-R2-4A	D-37	71-3 80	Orange-Red Black	Opens a circuit to the Search Index Coil.
CAM #7 Relay Coil	G-31-1800	A-3	90-5 70	Gray Orange	Energized during play cycles by Control Unit Cam Sw. G-5 (See C. U. illust.)
1 R. N.O.	ASW-R1-3A	F-20	21-3 25-5	Blue-Red Blue-White	Completes an odds control Circuit regulating feature step-ups thru the Score Discs & Mixer #4 Relay.
2 R. N.O.	ASW-R1-3A	D-54	21-3 43-14	Blue-Red Green-Yellow	Completes a circuit to the Feature Lock Re. & Play Fea. Re. during Blue or Green Button Play.

# BACK DOOR 7 RELAY BANK - BOTTOM

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
3 R. N. O.	ASW-R1-3A	G-21	21-3 14-8	Blue-Red Red-Green	Completes an odds control circuit regulating score step-ups, thru regular features discs & mixer #2 relay.
4 R. N. O.	ASW-R1-3A	C-64	13-11 65-17	Red-Yellow Brown-White	Completes a Control Circuit from Mixer #3 Disc to Blue & Green Score Disc for Zone Score Extra Steps.
1 F. N. O.	ASW-R1-3A	C-63	58-10 48-17	White-Black Green-Black	Completes a Control Circuit from Mixer #3 Disc to Red Score Disc for zone score extra steps.
2 F. N. O.	ASW-R1-3A	C-61	95-11 20-18	Gray-White Blue	Completes a Control Circuit from Mixer #3 Disc to Yellow Score Disc for Zone Score Extra Steps.
X 4 WIN RELAY COIL	G-33-2800	A-43	70 93-2	Orange Gray-Yellow	Energized by the color zone Selection Relays ( mounting board) thru the Color Zone Double Trips Sw.'s (Trip Relay Bank) from a Search Disc Color Zone Winner.
1 F. N. O.	G-33-2800	C-42	21-3 65-11	Blue-Red Brown-White	Completes circuit to Multiple Stepper Step-Up Coil thru X4 Pulse Relay (Mounting Board).
2 F. N. C.	ASW-R2-4A	C-51	13-15 70	Red-Yellow Orange	Allows X4 Pulse Relay to operated for Multiple Step-Up & Win Step-Up on Replay Register.
3 F. N. C.	ASW-R2-4A	C-51	13-15 70	Red-Yellow Orange	Same as above (#2 F.)
4 F. N. C.	ASW-R2-4A	A-51	10-19 70	Red Orange	Changes from X2 to 4 X Win on the Multiple Disc.
X2 WIN RELAY COIL	G-33-2800	A-43	70 95-14	Orange Gray-White	Energized by the 1-2 "C" Relays (Mounting Board) thru the Color Zone Winners circuit via the Double Trips (Trip Relay Bank) & Selection Relays (Mounting Board).
1 C. N. O.	ASW-R1-3A	C-42	21-3 65-11	Blue-Red Brown-White	Completes circuit to Multiple Stepper Step-Up Coil thru X2 Pulse Relay (Mounting Board).
2 C. N. C.	ASW-R2-4A	C-51	13-15	Red-Yellow	Allows X2 Pulse to operate for Multiple Step-Up & Win Step-Up on Replay Register.
3 C. N. C.	ASW-R2-4A	C-51	13-15 90-1	Red-Yellow Gray	Same as above (2 C.)
X1/2 WIN RELAY COIL	G-32-2500	A-44	70 98-10	Orange Gray-Black	Energized by the 1-2-3 "C" Relays (Mounting Board) thru the Color Zone Winners Circuit via the Double Trips (Trip Relay Bank) & Selection Relays (Mounting Board).
1 C. T.	ASW-R3-4A	D-38	63-14 81-10 61-18	Brown-Yellow Black-Red Brown-Red	Directs a Color Zone Win Circuit to the 6 Pulse (1/2) Control Unit Cam Switch (#1 Back Sw. - See C. U. illust.) For a win Step-Up on the Replay Register.

# BACK DOOR SEARCH RELAY BANK

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
Note: A #E-105-64 Resistor is installed between the Coil Terminals (all 5).					
#1 SEARCH Relay Coil	G-28-850A	J-46	50-9 20-5	White Blue	Energized thru Search Disc Circuits from 20 Panel Hole Sw.'s & Mystic Lines Motor unit discs.
1. N.O. (First Ball)	ASW-R1-8A	F-42	40-5 38-11	Green Yellow-Black	In series with 2 - 5 Search Relays Sw.'s to determine Color Zone & Star Winners thru the Score & Search Disc Circuits.
#2 SEARCH Relay Coil	G-28-850A	J-47	50-9 65-7	White Brown-White	Same as #1 Search Relay Coil
1. N.O. (2nd Ball)	ASW-R1-8A	F-43	38-11 36-11	Yellow-Black Yellow-Brown	In series with 1 - 5 Search Relay Sw.'s to determine Color Zone & Star Winners thru the Score & Search Disc Circuits.
#3 SEARCH Relay Coil	G-28-850A	J-47	50-9 60-4	White Brown	Same as #1 Search Relay Coil.
1. N.O. (3rd Ball)	ASW-R1-8A	E-43	31-11 36-11	Yellow-Red Yellow-Brown	Same as #2 Search Relay Sw.
#4 SEARCH Relay Coil	G-28-850A	J-47	50-9 15-3	White Red-White	Same as #1 Search Relay Coil.
1. N.O. (4th Ball)	ASW-R1-8A	E-43	61-3 23-8	Brown-Red Blue-Yellow	Same as #2 Search Relay Sw.
#5 SEARCH Relay Coil	G-28-850A	J-48	50-9 18-5	White Red-Black	Same As #1 Search Relay Coil.
1. N.O. (5th Ball - Extra Balls)	ASW-R1-8A	E-43	61-3 23-8	Brown-Red Blue-Yellow	Same as #2 Search Relay Sw.

## MYSTIC LINES UNITS

Note: Switch Stack No.'s Start at Bottom of Stack

MYSTIC LINES UNIT "A" CAM MOTOR	E-119-352A	A-18	70 13-5	Orange Red-Yellow	Energized thru "A" Button thru Mystic Lines Fea. Unit Disc (when lit)
1. N.O.	ASW-C2-2A	B-18	13-5 21-3	Red-Yellow Blue-Red	Completes Hold-In Circuit to "A" Motor
2. N.C.		J-42	10-1 18-4	Red Red-Black	Opens Circuit to Search Relays
"B" CAM MOTOR	E-119-353A	A-18	70 80-20	Orange Black	Energized thru "B" Button thru Mystic Lines Fea. Unit Disc (when lit).
1. N.O.	ASW-C1-11A	B-18	80-20 21-3	Black Blue-Red	Completes hold-in circuit to "B" Motor.
"C" CAM MOTOR	E-119-353A	A-19	31-19	Yellow-Red Orange	Energized thru "C" Button thru Mystic Lines Fea. Unit Disc (when lit).
1. N.O.	ASW-C1-11A	B-19	21-3 31-19	Blue-Red Yellow-Red	Completes Hold-in circuit to "C" Motor
"B" CAM RELAY COIL	G-33-2800	A-18	70 80-20	Orange Black	Energized thru "B" Button Circuit
1. N.C.	ASW-R1-4A	B-19	25-6 31-19	Blue-White Yellow-Red	Opens circuit to "C" Button
2. N.C.	ASW-R1-4A	B-18	40-13 45-5	Green Green-White	Opens circuit to "A" Button
3. N.C.	ASW-R1-4A	J-43	18-4 54-7	Red-Black White-Green	Opens circuit to Search Relays
"C" CAM RELAY COIL	G-33-2800	A-19	70	Orange Yellow-Red	Energized thru "C" Button Circuit
1. N.C.	ASW-R1-4A	B-18	13-5 40-13	Red-Yellow Green	Opens circuit to "A" Button
2. NC.	ASW-R1-4A	J-44	54-7 50-9	White-Green White	Opens Circuit to Search Relays
3. N.C.	ASW-R1-4A	B-18	80-20 48-5	Black Green-Black	Opens Circuit to "B" Button

# CONTROL BUTTON SWITCHES

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
"A" BUTTON N.O.	ASW-A1-24A	C-18	45-5 78-12	Green-White Orange-Black	Completes a circuit to "Mystic Lines "A" Motor (when lit).
"B" BUTTON N.O.	ASW-A1-24A	C-18	48-5 58-7	Green-Black White-Black	Completes a circuit to Mystic Lines "B" motor & relay coil (when lit).
"C" BUTTON N.O.	ASW-A1-24A	C-19	25-6 36-5	Blue-White Yellow-Brown	Completes a circuit to Mystic Lines "C" Motor & Relay Coil (when lit).
SELECTOR BUTTON N.O.	ASW-A1-24A	E-16	81-16 74-10	Black-Red Orange-Green	Completes a circuit to the step control relay (when lit)
"R" BUTTON N.O.	ASW-A1-22A	C-17	53-18 52-9	White-Yellow White-Blue	Completes a Circuit to Search Wiper Lock Magnet & "R" Button Relay.
MANUAL BALL LIFT BUTTON 1. N.O.	ASW-A1-26A	C-13	91-1 36-3	Gray-Red Yellow-Brown	Completes an auxill. circuit to the Ball Lifter Motor
2. N.C.	ASW-A2-9A	E-53	31-4 30	Yellow-Red Yellow	Opens a Circuit to the Lifter Start Relay thru the Ball Run-Way Sw.
YELLOW BUTTON 1. N.O.	ASW-A1-57A	C-12	10-2 25-8	Red Blue-White	Completes circuit to Extra Ball Trip #2 thru Select. Bef. 5th Lock Trip Switch.
2. N.O.	ASW-A1-58A	D-4	18-16 63-2	Red-Black Brown-Yellow	Completes an extra ball circuit to Start Relay.
3. N.C.	ASW-A2-30A	B-11	20-2 85-7	Blue Black-White	Opens a lock-in circuit to Red Button Relay.
1. N.O.	ASW-A1-93A	C-12	10-2 85-7	Red Black-White	Completes a circuit to Red Button Relay Coil
2. N.O.	ASW-A1-94A	E-4	50-2 63-2	White Brown-Yellow	Completes a circuit to the Start Relay Coil
3. N.C.	ASW-A2-58A	E-54	75-13 51-9	Orange-White White-Red	Opens a circuit to Blue & Green Button Play (scores & features).
RED BUTTON 1. N.O.	ASW-A1-93A	C-12	10-2 85-7	Red Black-White	Completes a circuit to Red Button Relay Coil
2. N.O.	ASW-A1-94A	E-4	50-2 63-2	White Brown-Yellow	Completes a circuit to the Start Relay Coil
3. N.C.	ASW-A2-58A	E-54	75-13 51-9	Orange-White White-Red	Opens a circuit to Blue & Green Button Play (scores & features)
GREEN BUTTON 1. N.C.	ASW-A2-33A	D-55	51-9 81-13	White-Red Black-Red	Opens circuit to the Blue Button (Scores)
2. N.O.	ASW-A1-61A	C-54	74-16 61-13	Orange-Green Brown-Red	Completes circuit to Play Features Relay
3. N.O.	ASW-A1-62	E-3	50-2 63-2	White Brown-Yellow	Completes a circuit to Start Relay Coil
BLUE BUTTON 1. N.C.	ASW-A2-33A	D-55	51-9 81-13	White-Red Black-Red	Opens circuit to the green button (features)
2. N.O.	ASW-A1-61A	C-55	60-13 85-15	Brown Black-White	Completes circuit to Play Scores Relay
3. N.O.	ASW-A1-62A	E-4	50-2 63-2	White Brown-Yellow	Completes a circuit to Start Relay Coil



# LOWER FRONT CAB. UNITS

Note: Switch Stack No. 's Start at Bottom of Stack

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
<b>Ball Detector Relay</b>					
<b>BALL DETECTOR RELAY COIL</b>	G-32-2500	A-13	70 41-4	Orange Green-Red	Energized thru the Ball Count Circuit (Trough Sw's 1-3 & also Extra Ball Disc).
1. N.O.	ASW-R1-8A	F-13	51-3 41-4	White-Red Green-Red	Completes lock-in circuit to this Relay.
2. N.O.	ASW-R1-3A	D-13	80-15 41-4	Black Green-Red	Completes 4 ball count circuit to the ball lifter motor.
3. N.C.	ASW-R2-4A	F-12	21-3 93-17	Blue-Red Gray-Yellow	Opens a circuit to the Tilt Trip Relay thru Ball Lifter Cam Sw. 2B if Lifter Motor cycles when Relay is not energized.
<b>"R" BUTTON RELAY</b>					
<b>"R" BUTTON RELAY COIL</b>	G-33-2800	A-17	70 52-9	Orange White-Blue	Energized thru the "Select Before 4th" Trip Bank Relay Sw. when "R" Button is played.
1. N.O.	ASW-R1-3A	F-11	21-3 54-11	Blue-Red White-Green	Completes a circuit to Timer Unit Reset Coil.
2. N.O.	ASW-R1-3A	D-51	60-1 57-1	Brown White-Orange	Completes a Red Letter Win Circuit to Red Letter Win Relays for next game set-up.
<b>COIN UNIT</b>					
Note: This unit divides cash between the two cash boxes - see stepping unit switch & coil chart.					
<b>BALL COUNT TROUGH SWITCHES</b>					
Note: These Switches are located under the Ball Trough & are numbered from Right to Left. #1 - #8 indicate ball on playfield or in trough.					
#1. BALL SW. N.O.	ASW-A1-95A	E-12 Jumped	41-4 71-6	Green-Red Orange-Red	Completes a circuit to the ball detector relay (opens after 7th ball).
#2 A. BALL SW. N.O.	SW-100-98A	E-12 Jumped	71-6 45-3	Orange-Red Green-White	Completes a circuit to the ball detector relay (opens after 6th ball)
#2 B. BALL SW. N.C.	SW-010-36A	E-15 Jumped	98-11 85-6	Gray-Black Black-White	Completes circuit to selector after 5th Ball trip bank relay (after 6th ball is shot)
#3 A. BALL SW. N.O.	SW-100-98A	G-12 Jumped	45-3 21-3	Green-White Blue-Red	Completes a circuit to ball detector relay (opens after 5th ball).
#3 B. BALL SW. N.C.	SW-010-36A	D-15 Jumped	85-6 54-5	Black-White White-Green	Completes a circuit to the "Before 5th Ball" Trip Bank Relay (after 5th is shot)
#4. BALL SW. N.C.	ASW-A2-60A	E-15 Jumped	78-7 85-6	Orange-Black Black-White	Completes circuit to the "Before 4th Ball" Trip Bank Relay (after 4th Ball is shot)
#5. BALL SW. N.C.	ASW-A2-60A	E-14 Jumped	85-6 75-16	Black-White Orange-White	Completes a circuit to the "Before 3rd Ball" Trip Bank Relay (after 3rd ball is shot)
#6. BALL SW. N.C.	ASW-A2-60A	E-14	71-14 85-6	Orange-Red Black-White	Completes a circuit to the "Before 2nd Ball Trip Bank Relay (after 2nd ball is shot).
#8. BALL SW. (Same Stack) N.O.	SW-A1-95A	B-13	38-3 91-1	Yellow-Black Gray-Red	Completes a circuit to Ball Lifter Motor so 1st Ball will not lift until all 8 balls are in trough.

# LOWER FRONT CAB. UNITS

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
<b>BALL LIFTER MOTOR UNIT</b>					
Note: Switch Stack No. 's Start with Outside Stack from Bottom to Top					
BALL LIFTER MOTOR	E-119-339B	A-13	70 38-3	Orange Yellow-Black	Energized thru the Ball Detector Circuit (Trough Sw.'s, #1, #2, #3).
1 A. N. C.	ASW-C2-6A	F-14	65-13 85-6	Brown-White Black-White	Opens Ball Count Circuit to the Selection Lockout Trip Relays.
1 B. N. O.	ASW-C1-2A	E-13	91-1 30	Gray-Red Yellow	Completes carry-over circuit to Ball Lifter Motor.
1 C. N. C.	ASW-C2-3A	C-7	57-7 53-5	White-Orange White-Yellow	Opens circuit to Shutter Motor.
1 D. N. O.	ASW-C1-2A	G-13	21-3 51-3	Blue-Red White-Red	Completes a Lock-In Circuit to Ball Detector Relay & a circuit to the Ball Lifter Motor.
2 A. N. O.	ASW-C1X-3A	D-9	43-2 27-2	Green-Yellow Blue-Orange	Completes a "Before 2, 3, 4 Ball Trip Circuit to Timer Unit Step-Up.
2 B. N. O.	ASW-C1x-2A	E-11	93-17 14-5	Gray-Yellow Red-Green	Completes Ball Detector Circuit to Tilt Trip Relay
3 A. N. C.	ASW-C-10A	G-4	48-2 95-3	Green-Black Gray-White	In Series with entire Game Start System (Start Relay).
Note: This Sw. is now Jumped (Non-Functional)					
<b>KUMBAC KEY-METER UNIT</b>					
Switch No. 's Start from Bottom of Stack to Top					
KEY PLAYS METER	E-130-10ND	A-39	70 63-20	Orange Brown-Yellow	Energized in series with the Replay Register Step-Up thru turning the Key Unit (single step).
1. N. C.	ASW-B-1A	B-4	98-20 13-16	Gray-Black Red-Yellow	Opens circuit to Start Relay
2. N. O.	ASW-B-2A	A-39	63-20 80-19	Brown-Yellow Black	Completes step-up circuit to Key Plays Meter & Replay Register.
3. N. O.	ASW-B-2A	D-39	50-20 93-20	White Gray-Yellow	Completes safety circuit to Watch Sw. (Meter Register Step-Up).
4. N. O.	ASW-B-2A	C-26	78-4 30	Orange-Black Yellow	Completes a circuit to the Anti-Cheat Relay.
5. N. O.	ASW-B-2A	C-11	14-5 21-3	Red-Green Blue-Red	Completes a circuit to the Shutter Motor
1. (WATCH SW.) T.	ASW-C3-6A	B-38	75-9 80-19 50-20	Orange-White Black White	Actuated by Key to step Replay Register & Key Play Meter

# PLAYFIELD PANEL UNITS

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
<b>PANEL SWITCHES</b>					
Note: Switch Stack No.'s Start at Bottom of Stack					
Ball Runway Sw. N.O. (Resistor)	ASW-A1-30A	D-53	38-8 30	Yellow-Black Yellow	Completes a circuit to Lifter Start Relay
Ball Gate Sw. (Top) N.C.	ASW-A2-5A	E-53	31-4 36	Yellow-Red Yellow-Brown	Opens Lifter Start Relay Lock-In Circuit
Yellow R.O. Panel Sw. N.O.	ASW-A10-16A	E-52	14-12 13-12	Red-Green Red-Yellow	Completes circuit to Yellow R.O. Trip Coil (When Sel. Bef. 5th Ball Fea. is Lit)
Red R.O. Panel Sw. N.O.	ASW-A10-16A	D-52	98-6 15-12	Gray-Black Red-White	Completes circuit to Red R.O. Trip Coil (When Sel. after 5th Ball Fea. is Lite).
<b>SHUTTER PANEL SWITCHES</b>					
Note: Switch No.'s start at front (Game Front) & Work towards Rear. Sw. closed when Shutter Open: CWO. Sw. Open when Shutter Open: O.W.O.					
1. N.C. O.W.O.	ASW-C2-17A	F-41	93-15 15-5	Gray-Yellow Red-White	Opens winners circuit to entire scoring system
2. C.W.O.	ASW-C2-11A	B-6	45-18 41-15	Green-White White-Red	Completes a Circuit to the Mixer Latch Coil & Timer Cams Index Coil.
3. N.C. C.W.O.	ASW-C2-11A	F-23	90-3 25-18	Gray Blue-White	Opens entire Red Letter Win-Step-Up System.
4. N.C. C.W.O.	ASW-C2-11A	G-54	21-3 75-13	Blue-Red Orange-White	Opens entire Red, Blue & Green Button System (Scores & Features Step-Up)
5. N.C. O.W.O.	ASW-C1-29A	D-52	56-4 71-14	White-Brown Orange-Red	Completes any 2, any 3 Star Zone Fea. Win Circuit to the Red Letter Win Relays (#1 & #2)
6. N.C.	ASW-C1-29A	B-8	91-11 53-5	Gray-Red White-Yellow	Completes a Red Letter Winner Circuit to Shutter Motor
7. C.W.O.	ASW-C111-1A	E-19	21-3 27-15 57-14	Blue-Red Blue-Orange White-Orange	Completes Mystic-Lines A-B-C Homing Circuit (Reset)
<b>LIFTER START RELAY</b>					
Lifter Start Relay Coil	G-32-2500	A-53	70 38-8	Orange Yellow-Black	Energized thru the Ball Runway Sw. de-energized when ball enters playfield (Ball Gate Sw.).
1. N.O.	ASW-R1-8A	C-53	36 38-8	Yellow-Brown Yellow-Black	Completes lock-in circuit to this Relay Coil
2. N.C.	ASW-R2-4A	F-14	10-13 65-13	Red Brown-White	Opens Selection Feature Circuit (Before 2, 3, 4, 5 & After 5 Ball - Mystic Lines).
3. N.C.	ASW-R2-4A	D-13	80-15 31-3	Black Yellow-Red	Opens a circuit to the ball lifter motor
4. N.C.	ASW-R2-4A	E-9	56-9 18-3	White-Brown Red-Black	Opens a circuit to the Shutter Motor
<b>PLAYFIELD SHUTTER MOTOR UNIT</b>					
Note: The lettered Switch Stacks (A - J) start from the Motor Side. Individual Stack Switches are numbered from Bottom to Top.					
MOTOR COIL	E-119-379B	A-7	70 53-5	Orange White-Yellow	Energized thru the Start Relay
1 A. N.C.	ASW-C1-27A	G-23	90-3 21-3	Gray Blue-Red	Opens circuit to Red Letter Win System.
2 A. N.O.	ASW-C2-15A	E-6	53-5 30	White-Yellow Yellow	Completes a direct circuit to Shutter Motor

# PLAYFIELD PANEL UNITS

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
Playfield Shutter Motor (Cont'd)					
3 A. N. C.	ASW-C2-2A	G-4	95-3 98-19	Gray-White Gray-Black	Jumped Sw. N/A game reset/start circuit.
4 A. T.	ASW-C12-1A	G-40	21-3 93-15 63-8	Blue-Red Gray- Yellow Brown- Yellow	Opens entire Winner Search & Score Step-Up & Directs Circuit to Red Letter Win Relays #1 & #2.
1 B. N. C. O. W. O.	ASW-C2-6A	F-10	21-3 65-2	Blue-Red Brown-White	Opens a timer circuit so that the Timer Unit can not step-up while starting a new game.
1 C. N. C. C. W. O.	ASW-C1-27A	D-13	31-3 36-3	Yellow-Red Yellow-Brown	Opens a circuit to the Ball Lifter Motor.
1 D. N. O. O. W. O.	ASW-C1-27A	B-67	30 85-5	Yellow Black-White	Completes a circuit to the Double Feature Game Reset Coils.
2 D. N. O. O. W. O.	ASW-C1-28A	B-10	90-20 30	Gray Yellow	Completes a circuit to the Trip Bank Reset Motor
1 E. N. O. C. W. O.	ASW-C2-6A	D-7	18-3 57-7	Red-Black White-Orange	Completes a circuit to the Shutter Motor
2 E. N. O. C. W. O.	ASW-C2-2A	F-7	45-8 18-3	Green-White Red-Black	Completes a circuit to the Shutter Motor
3 E. N. O. C. W. O.	ASW-C2-2A	G-52	21-3 63-8	Blue-Red Brown- Yellow	Completes a circuit to the Red Letter Win Relays
1 F. T.	ASW-C3-8A	C-6	61 10-10 51-15	Brown-Red Red White-Red	Directs Start Relay Circuit to the Mixer Latch Coil from the Timer Cams Index Coil & Shutter Motor Circuit
2 F. N. O. C. W. O.	ASW-C3-3A	F-53	31-4 90-9	Yellow-Red Gray	In series with the Lifter Start Lock-In Circuit.
3 F. N. O. C. W. O.	ASW-C2-2A	D-31	85-12 50-5	Black-White White	Completes a circuit to the Features Step-Up Units
4 F. N. O. C. W. O.	ASW-C2-2A	B-41	38-20 80-16	Yellow-Black Black	In series with 4 Star Replay Counter & Multiple Unit Homing Circuits.
1 G. N. C. O. W. O.	ASW-C1-27A	G-17	40-8 10-13	Green Red	In series with Ball Count Circuit to Selection Lockout Relays, "R" Button Mystic Lines Movement ("A", "B", "C" Buttons), Roll-Over Fea. & also opens a control circuit to the Double Feature Game Step-Up & Step Control Relay (Selector Button)
2 G. N. C. O. W. O.	ASW-C1-28A	G-15	10-13 40-8	Red Green	Opens a ball count circuit (Trough Sw.'s) to Selection Relays.
1 H. N. O.	ASW-C10-5A	D-10	71-8 30	Orange-Red Yellow	Completes a Timer Unit Reset Circuit
2 H. N. O.	ASW-C10-1A	D-66	78-3 30	Orange-Black Yellow	Completes a Reset Circuit to Scores & Features
3 H. N. O.	ASW-C10-1A	B-10	90-20 30	Gray Yellow	Completes a circuit to the Trip Bank Reset Motor
1 I. N. C. (Bottom Panel Mount)	ASW-C2-5A	A-12	91-15 70	Gray-Red Orange	In series with the Red Button Relay Circuit

# DOUBLE FEAT. GAME 7 RELAY BANK

Relay Bank Information Reads from Left to Right  
& Switch Stack No. 's start at Bottom Row, Bottom  
Stack to Top of Bottom Stack then Bottom of top

stack to top of top stack. A: bottom stack,  
B: Top Stack.

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
BLUE SELECTION RELAY COIL	G-33-2800	A-36	70 65-14	Orange Brown-White	Energized thru the Double Selection Disc (mounting Board) thru Selector Button Play when Fea. is Lit.
1 B. T.	ASW-R3-4A	G-38	90-17 80-13 52-14	Gray Black White-Blue	Directs Step-Up Circuit to Blue 1/2, Even, & Double Feature Game Lites thru Trip Bank Blue Double Trip Sw.
2 B. T.	ASW-R3-4A	G-38	85-16 45-7 53-17	Black-White Green-White White- Yellow	Directs Step-Up Circuit from Blue, 1/2, Even Double to Double-Double Feature Game Lites thru Trip Bank Blue Double Trip Sw.
3 B. T.	ASW-R3-4A	B-47	23-20 75-19 93-2	Blue- Yellow Orange-White Gray- Yellow	Directs Blue Feature Game Winners from X2 Win Relay to X4 Win Relay Coil for Register Step-Up
4 B. T.	ASW-R3-4A	B-47	25-19 71-20 95-14	Blue-White Orange-Red Gray-White	Directs Blue Feature Game Winners from X1/2 to X2 Win Relay Coil for Register Step-Up.
GREEN SELECTION RELAY COIL	G-33-2800	A-36	70 63-19	Orange Brown- Yellow	Energized thru the Double Selection Disc (Mounting Board) thru Selector Button Play (when lit).
1 B. T.	ASW-R3-4A	G-37	71-16 50-13 45-13	Orange-Red White Green-White	Directs Step-Up Circuit to Green 1/2, Even & Double Feature Game Lites thru Trip Bank Green Double Trip Sw.
2 B. T.	ASW-R3-4A	G-37	75-14 43-18 48-4	Orange-White Green- Yellow Green-Black	Directs Step-Up Circuit from Green 1/2, Even, Double, to Double-Double Feature Game Lites thru Trip Bank Green Double Trip Sw.
3 B. T.	ASW-R3-4A	B-50	27-19 90-19 93-2	Blue-Orange Gray Gray- Yellow	Directs Green Feature Game Winners from X2 Win Relay to X4 Win Relay Coil for Register Step-Up
4 B. T.	ASW-R3-4A	B-50	31-14 91-19 95-14	Yellow-Red Gray-Red Gray-White	Directs Green Feature Game Winners from X1/2 to X2 Win Relay Coil for Register Step-Up
YELLOW SELECTION RELAY COIL	G-33-2800	A-36	70 83-20	Orange Black- Yellow	Energized thru the Double Selection Disc thru Selector Play Button when Fea. is Lit.
1 B. T.	ASW-R3-4A	G-36	61-4 60-16 38-14	Brown-Red Brown Yellow-Black	Directs Step-Up Circuit to Yellow 1/2, Even & Double Feature Game Lites thru Trip Bank Yellow Double Trip Sw.
2 B. T.	ASW-R3-4A	G-36	63-6 41-19 40-10	Brown- Yellow Green-Red Green	Directs Step-Up Circuit from Yellow 1/2, Even, Double to Double-Double Fea. Game Lites thru Trip Bank Yellow Double Trip Sw.
3 B. T.	ASW-R3-4A	B-43	13 74-18 93-2	Red- Yellow Orange-Green Gray- Yellow	Directs Yellow Feature Game Winners from X2 to X4 Win Relay Coil for Register Step-Up.
4 B. T.	ASW-R3-4A	B-43	14-19 78-14 95-14	Red-Green Orange-Black Gray-White	Directs Yellow Feature Game Winners from X1/2 to X2 Win Relay Coil for Register Step-Up.
RED SELECTION RELAY COIL	G-33-2800	A-36	70 60-19	Orange Brown	Energized thru the Double Selection Disc thru Selector Button Play when Fea. is Lit.
1 B. T.	ASW-R3-4A	G-35	54-8 51-19 14-17	White-Green White-Red Red-Green	Directs Step-Up Circuit to Red 1/2, Even, & Double Fea. Game Lites, thru Trip Bank Red Double Trip Sw.
2 B. T.	ASW-R3-4A	G-35	56-8 51-19 14-17	White-Brown White-Red Red-Green	Directs Step-Up Circuit from Red 1/2 Even Double to Double-Double Fea. Game Lites thru Trip Bank Red Double Trip Sw.
3 B. T.	ASW-R3-4A	B-45	15-18 85-19 93-2	Red-White Black-White Gray- Yellow	Directs Red Fea. Game Winners from X2 to X4 Win Relay Coil for Register Step-Up.

# DOUBLE FEAT. GAME 7 RELAY BANK

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
4 B. T.	ASW-R3-4A	B-45	18-21 81-17 95-14	Red-Black Black-Red Gray-White	Directs Red Feat. Game Winners from X1/2 to X2 Win Relay Coil for Register Step-Up
C-3 RELAY COIL	G-32-2500	A-35	70 40-14	Orange Green	Energized thru C1 Relay Sw. which pulls-in when Feature Game is lit (thru Double Sel. Disc)
1 A. N.C.	ASW-R2-4A	B-45	18-21 98-10	Red-Black Gray-Black	Opens Win Circuit to Red X1/2 Win Relay.
2 A. T.	ASW-R3-4A	H-37	41-16 71-16	Green-Red Orange-Red	Directs Green Feat. Game Lite Circuit From 1/2 to Even
3 A. T.	ASW-R3-4A	H-35	43-4 74-13 54-8	Green-Yellow Orange-Green White-Green	Directs Red Feat. Game Lite Circuit From 1/2 to Even
4 A. T.	ASW-R3-4A	H-35	78-2 56-3 14-17	Orange-Black White-Brown Red-Green	Directs Red Feat. Game Lite Circuit from Even to Double (via Selector Button or Red Double Trip Bank Sw.)
1 B. T.	ASW-R3-4A	H-38	50-1 90-17 51-18	White Grey White-Red	Directs Blue Feat. Game Lite Circuit from 1/2 to Even.
2 B. T.	ASW-R3-4A	H-38	51-18 85-16 52-14	White-Red Black-White White-Blue	Directs Blue Feat. Game Lite Circuit from Even to Double (via. Selector Button or Blue Double Trip Bank Sw.)
C-2 RELAY COIL	G-32-2500	A-35	70 20-4	Orange Blue	Energized thru C1 Relay Sw. which pulls in when feature game is lit-in series with C1, C2 Relays (thru Double Selection Disc).
1 A. N.O.	ASW-R1-3A	B-47	95-14 23-20	Grey-White Blue-Yellow	Completes Blue Winner Circuit to X4 Win Relay (thru Search Disc, Blue Double Trip & Blue Sel. Re.).
2 A. N.O.	ASW-R1-3A	B-50	95-14 27-19	Grey-White Blue-Orange	Completes Green Winner Circuit to X2 Win Relay (thru Search Disc Green Double Trip, & Green Sel. Re.).
3 A. N.C.	ASW-R2-4A	B-43	14-19 98-10	Red-Green Gray-Black	Opens Yellow Win Circuit to X1/2 Win Relay
4 A. T.	ASW-R3-4A	H-37	43-4 75-14 45-13	Green-Yellow Orange-White Green-White	Directs Green Feat. Game Lite Circuit from Even to Double
1 B. T.	ASW-R3-4A	H-36	91-5 61-4 36-20	Gray-Red Brown-Red Yellow-Brown	Directs Yellow Feat. Game Lite from 1/2 to Even.
2 B. T.	ASW-R3-4A	H-36	36-20 63-6 38-14	Yellow-Brown Brown-Yellow Yellow-Black	Directs Yellow Feat. Game Lite from Even to Double
C 1 RELAY COIL	G-32-2500	A-35	70 58-6	Orange White-Black	Energized when this Game Feature is lit thru Blue Button Play (thru Double Selection Disc).
1 A. N.O.	ASW-R1-3A	A-35	21-3 20-4	Blue-Red Blue	Completes Circuit to & Energizes C2 Relay Coil (C-1, C2, C3 in series)
2 A. N.O.	ASW-R1-3A	A-35	21-3 40-14	Blue-Red Green	Completes Circuit To & Energizes C3 Relay Coil (C1, C2, C3, in Series)
3 A. N.O.	ASW-R1-3A	B-43	13 95-14	Red-Yellow Gray-White	Completes Yellow Twin Circuit to X2 Win Relay thru Yellow Double Trip & Yellow Sel. Re.
4 A. N.O.	ASW-R1-3A	B-45	15-18 95-14	Red-White Gray-White	Completes Red Win Circuit to X2 Win Relay (thru Search Disc, Red Double Trip Sw., & Red Sel. Re.)
1 B. N.C.	ASW-R2-4A	B-50	98-10 31-14	Gray-Black Yellow-Red	Opens Green Winner Circuit to X1/2 Win Relay
2 B. N.C.	ASW-R2-4A	B-47	98-10 25-19	Gray-Black Blue-White	Opens Blue Winner Circuit to X1/2 Win Relay

# DOUBLE FEAT. GAME 4 RELAY BANK

Relay Bank Information Reads from Left to Right  
& Switch Stack No.'s start from Bottom of Stack.

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
STEP CONTROL RELAY COIL	G-33-2800	A-16	70 95-13	Orange Gray-White	Energized thru the Double Selection Disc (Mounting Board) or thru Double Feature Disc (when lit) via the Selector Button.
1. N.O.	ASW-R1-3A	C-16	21-3 93-16	Blue-Red Gray-Yellow	Lock-In Circuit to this Relay Coil & also completes circuit to Double Selection Unit Step-Up Coil (thru Mixer Cam A)
P. 1 RELAY COIL	G-33-2800	A-34	70 27-16	Orange Blue-Orange	Energized thru the Selection Feature Disc & Mixer #5 Disc.
1. N.C.	ASW-R2-4A	D-29	14-17 48-15	Red-Green Green-Black	Opens a circuit to the Double Feature Unit Step-Up Coil
2. N.C.	ASW-R2-4A	B-26	71-13 41-18	Orange-Red Green-Red	Opens the score step-ups & feature game score steps circuit.
P. 2 RELAY COIL	G-33-2800	A-34	70 36-18	Orange Yellow-Brown	Energized thru the Selection Feature Disc & Mixer #5 Disc.
1. N.C.	ASW-R2-4A	D-31	90-15 40-16	Gray Green	Opens a circuit to the Mystic Lines Step-Up & Selection Feat. Step-Up
P. 3 RELAY COIL	G-33-2800	A-35	70 58-15	Orange White-Black	Energized thru Control Unit Cam #7 Cam #7
1. N.O.	ASW-R1-8A	C-35	60-7 58-15	Brown White-Black	Lock-In Circuit to this Relay Coil
2. N.O.	ASW-R1-3A	D-31	40-16 45-6	Green Green-White	Completes a Control Circuit to Reg. Features Step-Up
3. N.O.	ASW-R1-3A	A-26	41-18 38-9	Green-Red Yellow-Black	Completes the Score Step-Up & Double Feat. Score Step-Up Circuit.

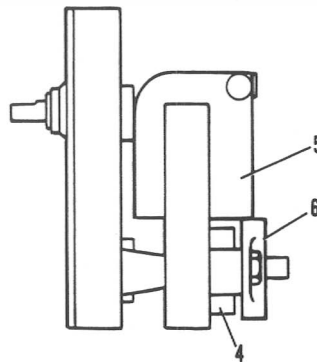
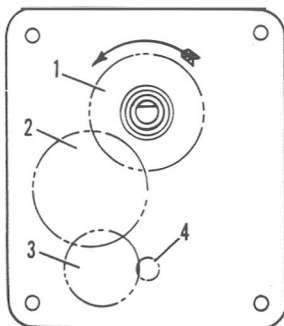
## MOTOR PARTS GUIDE

### MOTOR PARTS CODE

1	Gear & Power Shaft Assembly	4	Rotor & Geared Shaft Assembly
2	Intermediate Gear	5	Stator & Coil Assembly
3	1st Gear	6	Front Rotor Bearing & Bracket Assembly

### MYSTIC LINE "A" MOTOR, #E-119-352

Code No.	Part No.
1. . . . .	HGS-1726-1
2. . . . .	G-5818-1
3. . . . .	G-4109-1
4. . . . .	ZRST-1400-0007
5. . . . .	ZS-1704-2521
6. . . . .	ZBB-7596-10



### MYSTIC LINES "B" & "C" MOTOR, #E-119-353

Code No.	Part No.
1. . . . .	HGS-1744-1
2. . . . .	G-5318-10
3. . . . .	G-4114-10
4. . . . .	ZRST-1400-0008
5. . . . .	ZS-1703-2522
6. . . . .	ZBB-7596-10

# MOTOR PARTS GUIDE

## CONTROL UNIT & MIXER UNIT MOTOR #E-119-359

Code No.	Part No.
1. . . . .	ZEG-4020-1
2. . . . .	G-6712-32
3. . . . .	GL-6312-21
4. . . . .	ZRS-4000-0003
5. . . . .	ZS-4018-26109
6. . . . .	ZBB-7553-20
7. . . . .	P-1036-1 (Plastic Fan)

## TRIP RELAY MOTOR, #E-119-362

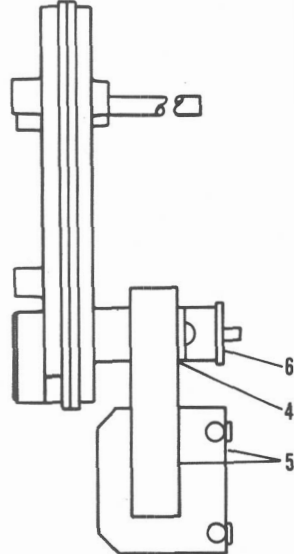
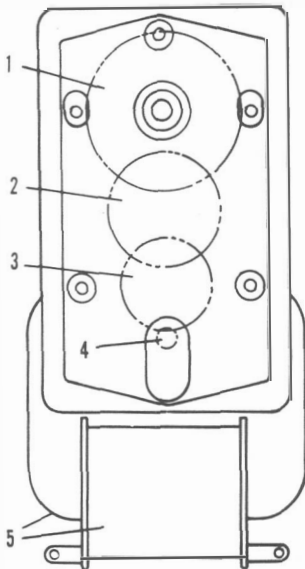
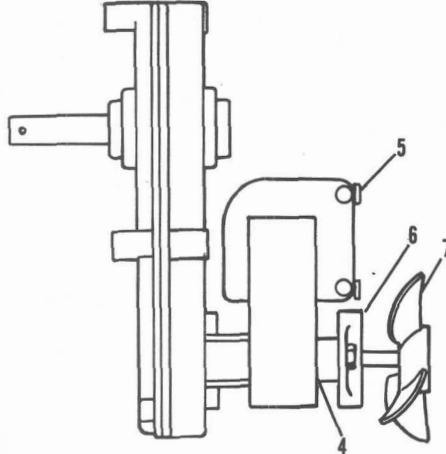
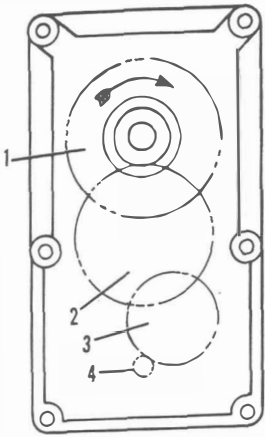
Code No.	Part No.
1. . . . .	ZGS-2535-10
2. . . . .	G-5818-40
3. . . . .	G-4114-10
4. . . . .	ZRST-1700-0030
5. . . . .	ZS-2507-2418
6. . . . .	ZBB-2535-10

## PANEL SHUTTER MOTOR, #E-119-379

Code No.	Part No.
1. . . . .	S-1725-15 (Shaft)
. . . . .	G-7300-1031 (Gear)
. . . . .	B-1093-0050 (Pin)
2. . . . .	G-5818-10
3. . . . .	G-4111-10
4. . . . .	ZRST-1700-0006
5. . . . .	ZS-1708-2519
6. . . . .	ZBB-3527

## BALL LIFTER MOTOR, #E-119-339

Code No.	Part No.
1. . . . .	ZGS-1745-12
2. . . . .	G-5818-10
3. . . . .	G-4119-10
4. . . . .	ZRST-1700-0006
5. . . . .	ZS-1708-2519
6. . . . .	ZBB-3527





# MISCELLANEOUS PARTS

Part No.	Description
W-826-49	"Double-Up" Schematic Wiring Diagram
<u>BACK CABINET ASSEMBLY</u>	
G-292-36	"Double-Up" Backglass (std.)
M-1424-16	"Double-Up" Backglass (plexi-glass)
CA-1120-41ND	Back Cabinet - Painted
CA-1173B	Side Molding - Right
CA-1173-1B	Side Molding - Left
P-2830A	Lock Bracket (on Molding)
M-281-31A	Lock Set (Molding)
M-475-1A	Nut Lock Set (Molding)
P-2831A	Lock Brackets (Nut)
E-126-63A	Cord Set
E-122-103B	Transformer
A-3400-100	Back Cab. Insert & Lamp Socket Assy.
E-125-2A	#47 Light Bulb (46 Req'd)
E-125-5A	#55 Light Bulb (97 Req'd)
E-125-19A	#55 Red Light Bulb (6 Req'd)
E-148-9A	Fuse Block
E-133-10A	10 Amp Fuse ( 6 Req'd)
<u>BACK DOOR</u>	
CA-1120-40	Back Door Painted
M-281-25A	Lock Set
P-2335-9A	Hinge Set (Door Side)
A-1511-1A	Hinge - Top (Cabinet Side)
A-1511-2A	Hinge - Bottom (Cabinet Side)
<u>FRONT CABINET ASSEMBLY</u>	
CA-1119-42	Front Cabinet (Painted)
CA-567-185	Side Door (Painted)
CA-1105-3	Cash Box Door (Painted)
M-281-54A	Lock (Side Door)
M-281-58A	Lock (Cash Box Door & Kumb Back Key)
A-2790-47B	Side Door Cash Box
A-2790-48B	Front Door Cash Box
A-3089-50B	Cash Box Cover (Front Door Unit)
A-2618B	Legs
M-106-1A	Leg Bolt (8 Req'd)
M-163-4A	Leg Adjuster
M-168-15A	Game Ball Set (8)
G-213A	Top Playfield Glass
AS-187-17A	Ball Shooter Assembly
A-100-7A	Knob & Shooter Rod
SP-243A	Front Compression Spring
AS-1835A	Front Shooter Guide Unit
SP-200-24B	Rear Compression Spring
P-2879A	Spring Cap-Rear
P-2891-8A	Retainer Ring
R-108-3A	Rubber Shooter Tip

Part No.	Description
AS-2183-10	Push Button Assy. (Green)
AS-2183-11	Push Button Assy. (Blue)
AS-2183-12	Push Button Assy. (Red)
AS-982-915A	Switch & Brkt. Assy. (Buttons)
E-108-57A	Off-On Switch
<u>FRONT DOOR ASSEMBLY</u>	
AS-2041-77	Front Door Complete (single coin)
M-281-54A	Front Door Lock
A-254-84A	Hinge
M-1400-Series	Slug Rejector (Specify coin denomination)
AS-277-144	Coin Switch & Rejector Motor Assy. (Specify coin denomination)
AS-2517-12A	Coin Deflector (cash box separator)
A-1729-15A	Push Button Assy. (Yellow)
<u>FRONT MOLDING ASSEMBLY</u>	
AS-1305-58	Front Molding Assy. (complete)
A-1252-17A	"A" Button & Pin
A-1272-18A	"B" Button & Pin
A-1272-19A	"C" Button & Pin
A-1272-29A	"R" Button & Pin
A-1272-60A	"Selector" Button & Pin
P-2210-Series	Coin Entry Plate (Specify coin denomination)
SP-200-111B	Compression Spring (Buttons)
P-801-214B	Washer (Buttons)
P-448-6A	Snap Washer (Buttons)
AS-982-916A	Switch & Brkt. Assy. (A, B, C Buttons)
AS-982-759A	Switch & Brkt. Assy. (R Button)
<u>PLAYFIELD PANEL</u>	
AS-2042-136	Panel Unit (Complete)
CA-638-89	Panel (Painted)
C-326-9A	White Light Shield Post
E-125-2A	#47 Light Bulb (8 Req'd)
M-170A	Rebound Spring (8 Req'd)
C-119-21A	Red Bumper Post (2 Req'd)
C-119-23A	Yellow Bumper Post (27 Req'd)
R-135A	Bumper Rubber (Double Units)
R-243A	Bumper Rubber (Yellow Post)
R-243-2A	Bumper Rubber (Red Post)
R-115-4A	Ball Rebound Rubber
S-196A	Playfield Pin (Springs)
SP-112A	Long Panel Spring (8 Req'd)
SP-112-1A	Short Panel Spring (4 Req'd)
AS-1315A	Ball Gate & Sw. Unit
C-153A	Red Plastic Ball Lift Cover

ALWAYS GIVE MODEL AND PART NO. WHEN ORDERING SERVICE PARTS