

Bally

Manual No. 2500
Game No. 970
October 30, 1973

HAWAII

SERVICE & OPERATING INSTRUCTIONS



Bally

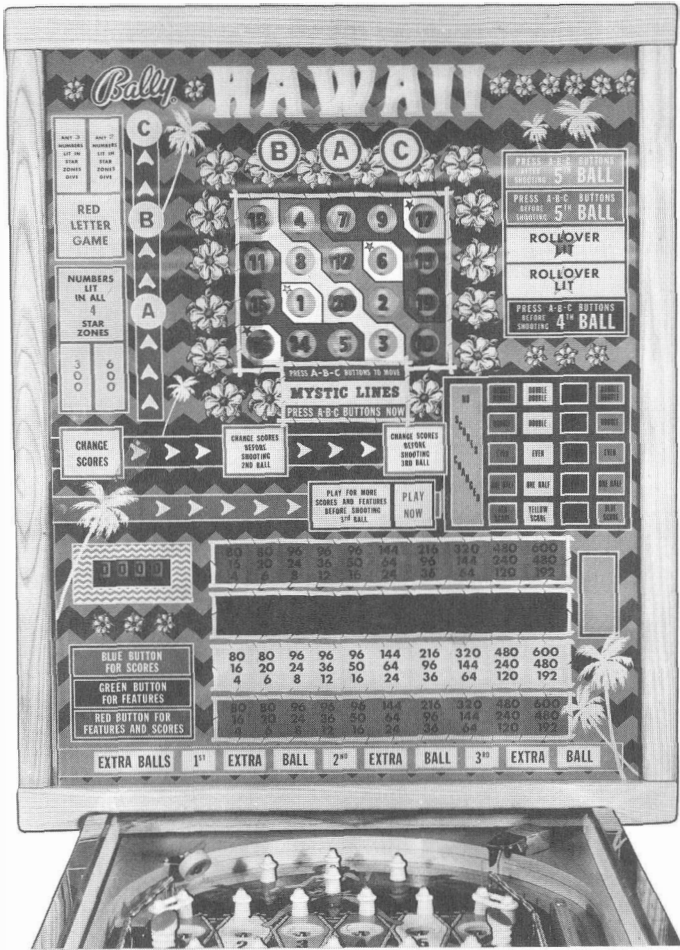
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INTRODUCTION



BALLY SCHEMATIC DIAGRAM WIRING & CIRCUIT CODES

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 SYMBOLS		
Normally Open (N. O.)	Normally Closed (N. C.)	Transfer (T.) (S. P. D. T.)

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

BALLY HAWAII BINGO

GAME INTRODUCTION

The Bally "Hawaii" is a new sophisticated 20 hole Bingo Game with all the traditional Bally pioneered features. The "Hawaii" is very similar to the Bally "Double-Up" which was introduced in July 1972. All of the game play features of the successful "Double-Up" have been retained. However, the "Hawaii" Game has added new features & scores step-up option which can be played (when lit - additional coins) after the first thru third ball has been played. The following paragraphs briefly outline the basic game play features.

BINGO GAME PLAY DEVELOPMENT

The basic play of the "Hawaii" Bingo is a highly developed version of the first 5 ball bingo which was invented & introduced by Bally in 1951. "Hawaii's" basic game is the 3-5 ball color zone win with the multiple coin advancing scores. The traditional Bingo features are the Mystic Lines option, the Star Zone Win, Roll-Overs, the Extra Ball option, and the Red Letter option for a following game carry-over lead (auto. scores & fea. step-up).

Every new Bingo also introduces a New Game Feature which is unique to that game. The Bally "Double-Up" introduced the "Change Scores Feature" which was designed to give a player a score advantage in a particular color zone (1/2-4 times winning score). This "when lit" feature advances on Red, Green or Blue Button multiple coin play & allows the player to change the color zone advantage up to the third ball. This popular feature was retained by "Hawaii".

In addition to the change scores fea. "Hawaii" added a new advancing "when lit" feature, the "Play For More Scores & Features Before Shooting Third Ball" option. This feature gives the player a big incentive to build up his scores & features especially if his first two balls have a color zone advantage and certain mystic line features are lit.

SERVICE INTRODUCTION

From a service standpoint if you are acquainted with the "Double-Up Bingo" you should have no trouble understanding the "Hawaii". In fact this certain type of Bingo Game belongs to a "family" of games starting with "Orient" 1967-68, "London" 1969, "Safari" 1969-1970, "Super 7" 1970, "Bonus 7" 1970-1971, "Double-Up" 1972 and now "Hawaii" 1973.

Your wiring schematic (#W-826-51) is your central source of information. Units are easy to

find on the Schematic by using the Location Chart on the right side. Wire Color, Switch, Coin Conversion & Transformer Information is on the right side. Once circuit function information has been pinpointed on the schematic, troubleshooting a malfunction is relatively simple.

All of the units within the game are also completely labeled for easy service location. You will also note that all Bally coils are labeled with the Part Number.

This Service Book provides you with complete information on all Contact Plate Functions & Unit Switch Functions with cross references to the Schematic.

Part Numbers for Switches Motors, Coils and Contact Plate Discs are incorporated into the individual unit Function Charts & Disc Wiring Breakdowns. Replacement Parts such as Glass, Playfield Units, Slug Rejectors & Appearance Items are indexed in the rear of this Manual.

LUBRICATION & CLEANING

The Bingo Game contains dozens of moving parts which must be lubricated periodically. On all light duty Pivot Points & Bearings use Bally Lubriplate No. 1 Oil. For heavy duty use on Shafts, Gear Teeth & Wear Points use Bally's new Heavy Duty Hyrotex Lube #651.

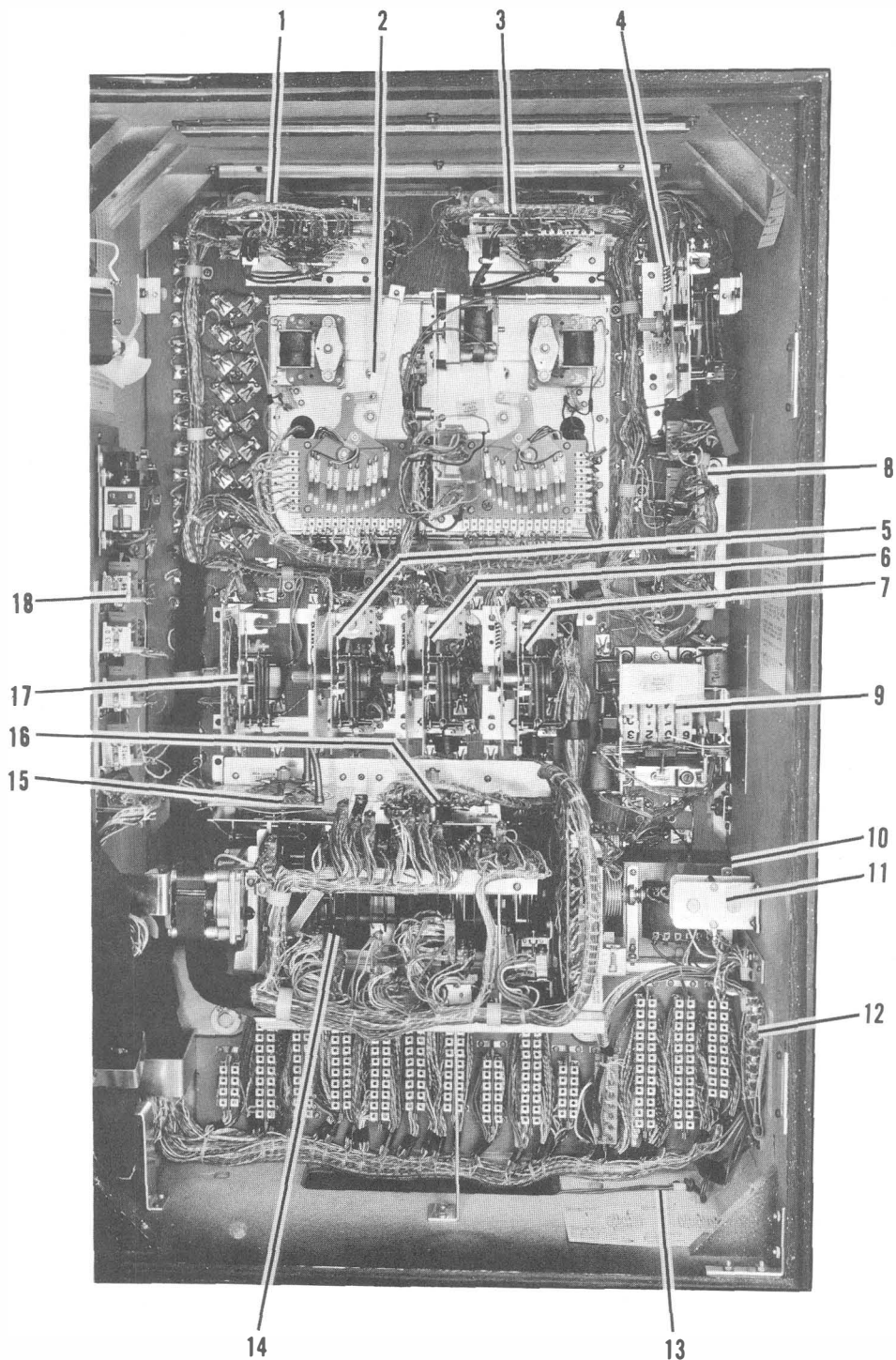
The Control Unit & Mixer Unit use Leather Clutches. These clutches require periodic lubrication with Neat's-foot Oil for good long wear & smooth operation.

As with all electronic units the Contact Plates and Switch Contacts attract oily dirt & dust. Build-up of scum over the years can knock out important circuits. It is suggested that all Contact Plate Discs & Switches be cleaned off every other month with a good electronic cleaning solvent which is available in Aerosol Cans. Contact Plate Discs, Printed Circuits & Switch Contacts should be perfectly clean & should not be lubricated.

When cleaning Switch Contacts the Aerosol Spray Solvent treatment should be good enough. The contacts should never be filed as this action destroys the seats and in doing causes further arcing & wear. It should also be noted that carbon need not be removed as it is a good conductor & preventing oxidation of the silver contacts.

When you Adjust Relay Switches, adjust the static blade only, bending the actuating blade can impart unbalance, sluggish operation & buzzing.

BACK CABINET UNIT LAYOUT & PAGE INDEX



ALWAYS GIVE MODEL AND PART NO. WHEN ORDERING SERVICE PARTS

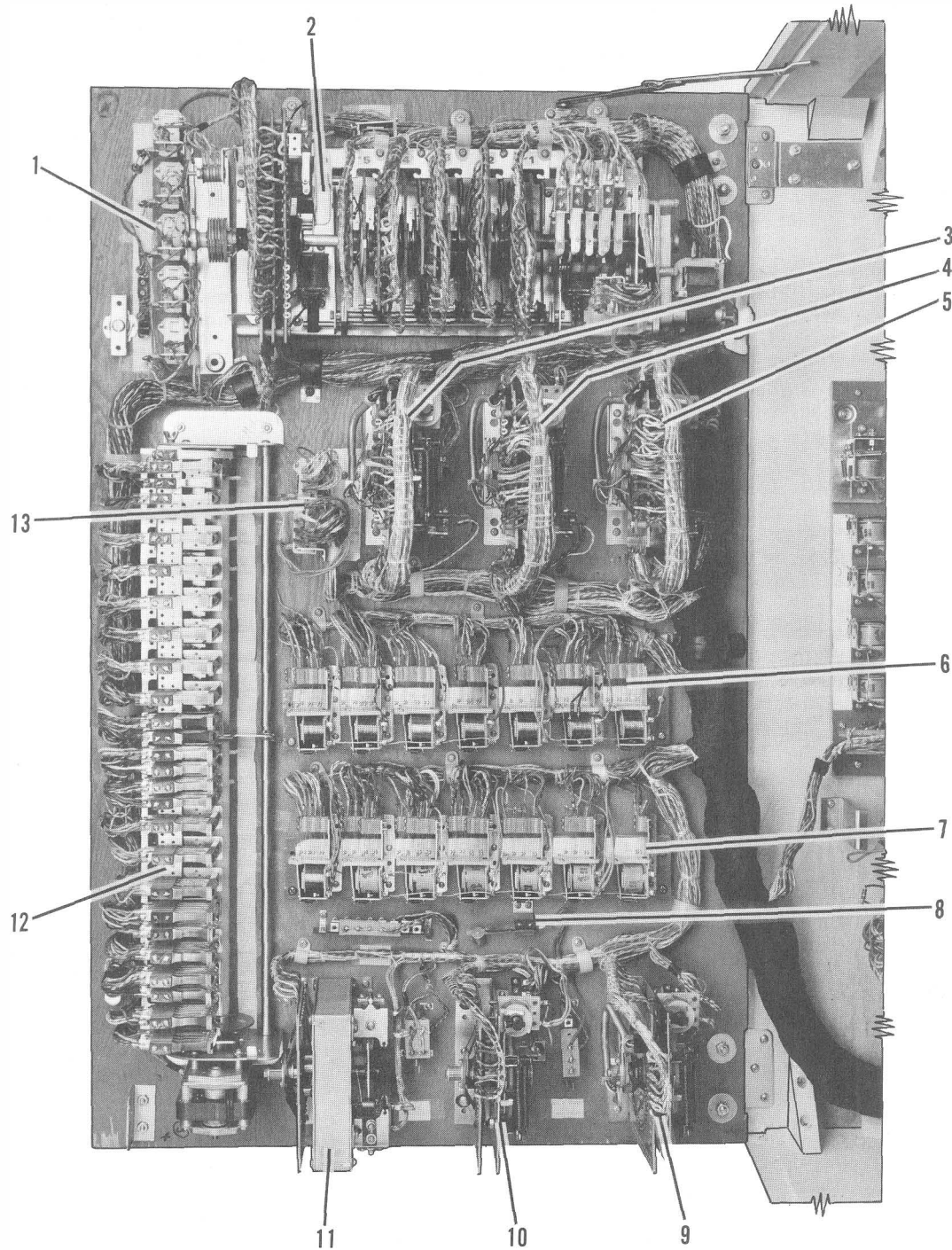
BACK CABINET UNIT LAYOUT & PAGE INDEX

Index No.	Part No.	Description	Page No. Ref.	Index No.	Part No.	Description	Page No. Ref.
Note: This Photograph shows an interior view of the Back Cabinet & Insert Unit. You will note that the layout of components is identical to the "Super 7" & "Double-Up" Bingo Units.				2		Multiplay Relay Function Chart (coinage info) . .	40
				3		Start Relay Function Chart	40
				4		Replay-Reset Function Chart	40
1.	AS-827-519	Selection Features Unit Switch & Coil Function Chart	24	9.	AS-473-54	Replay Register Unit Function Chart	25
		Contact Plate Disc Function Diagram	28	10.	E-122-103	Transformer See Schematic for 115V or 220/240V change over info.	
2.	AS-1809-10	Mystic Lines Unit Mystic lines motor unit discs & parts list . . .	16	11.		Rectifier Bridge (no longer used)	
		Winners Search Positions & Layout Chart	17	12.	E-148-9 E-133-10	Fuse Block 10 Amp Fuse (6 Req'd) . .	61 61
		Mystic Lines Unit Function Chart	18	13.	E-126-63	Cord Set (3 prong type) .	61
3	AS-827-521	Mystic Lines Feature Unit Switch & Coil Function Chart	24	14.	AS-798-116	Control Unit Pictorial Layout	10
		Contact Plate Disc Function Diagram	29			C.U. Sw. & Coil Func. Chart	11-13
4.	AS-797-224	Blue Replay Counter Unit (same as other counters except for a coil clearance change) Switch & Coil Function Chart	24			C.U. Search Disc & Wiper Function Diagram . .	14-15
		Contact Plate Disc Function Diagram	19			C.U. Winner Search Posi- tions Chart	16-17
5.	AS-797-225	Green Replay Counter Unit Switch & Coil Function Chart	24			Search Relay Func. Chart	18
		Contact Plate Disc Function Chart	19			C.U. Winner Replay Counter Chart	19
6.	AS-797-225	Red Replay Counter Unit Switch & Coil Function Chart	24			Score Value Chart . . .	19
		Contact Plate Disc Func- tion Diagram	19	15.	AS-1022-140	Red Letter Unit Sw. & Coil Func. Chart .	25
7	AS-797-225	Yellow Replay Counter Unit Switch & Coil Function Chart	25			Contact Plate Disc Func- tion Diagram	30
		Contact Plate Disc Func- tion Diagram	19	16.	AS-1148-31	Extra Ball Unit Sw. & Coil Function Chart	25
8.	E-300-679	4 Bank Relay Unit (listed from top) Anti-Cheat Relay Function Chart	40			Contact Plate Disc Func- tion Diagram	31
1				17.	AS-827-484	Multiplier Unit Sw. & Coil Func. Chart .	25
						Contact Plate Disc Func- tion Diagram	32
				18.	AS-2390-4	Auxiliary Board Assy. Function Chart	
					AS-1237-7	All 4 Stars Replay Counter	41
					AS-2659-88	X4 Pulse	41
					AS-2659-88	X2 Pulse	41
					AS-2659-34	2nd Extra Step	41
					AS-2659-34	1st Extra Step	41

Note: For Glass, Cabinetry, Motor & Hardware information check the Parts Guide in the rear of the Manual.

ALWAYS GIVE MODEL AND PART NO. WHEN ORDERING SERVICE PARTS

BACK DOOR UNIT LAYOUT & PAGE INDEX



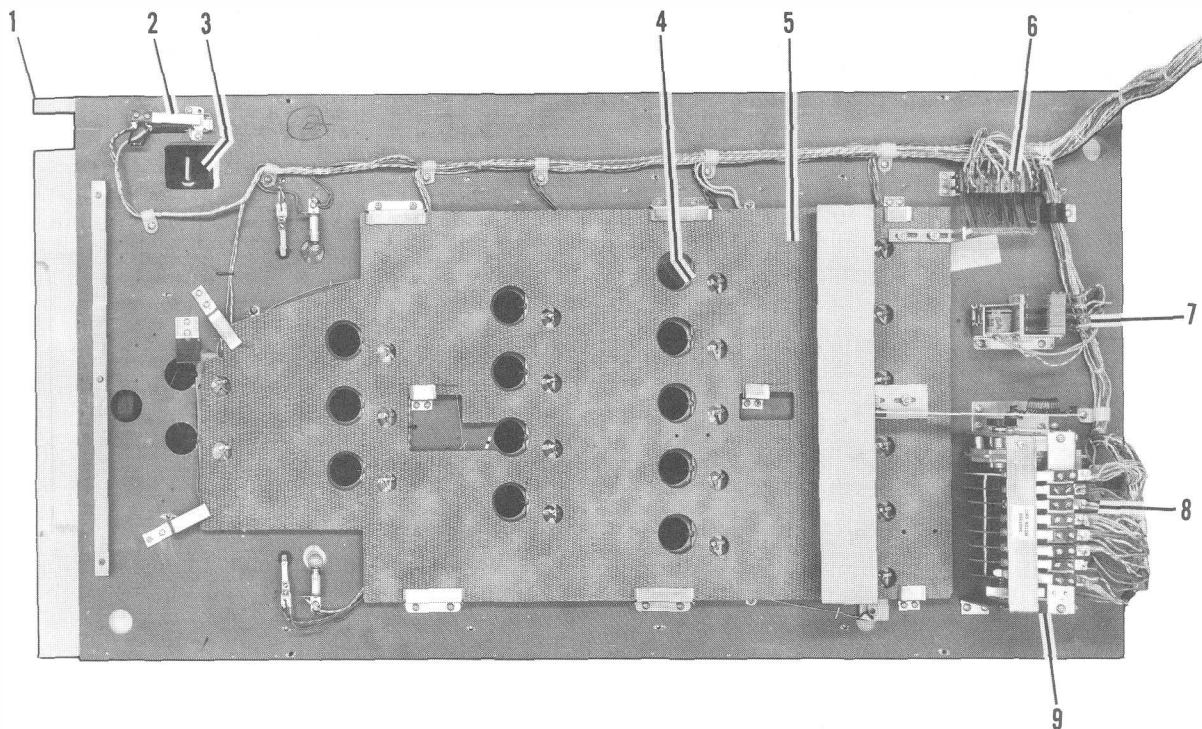
ALWAYS GIVE MOOEL AND PART NO. WHEN ORDERING SERVICE PARTS

BACK DOOR UNIT LAYOUT & PAGE INDEX

Index No.	Part No.	Description	Page No. Ref.	Index No.	Part No.	Description	Page No. Ref.
<p>Note: This Photograph shows the interior view of the Back Door Assembly. You will notice that the component layout is identical to the "Double-Up" Game. The only new development are the two new Relays ("X-1" & "X-2" Feature Units) located next to the "Yellow Score" Stepper.</p> <p>Minor switching changes have been made on the following Units:</p>				7.	E-300-633	7 Unit Relay Bank - Bottom Relay Function Chart (L - R):	
		A. Red Button Relay . . .	50			B. Red Letter #2	50
		C. Red Letter #1	50			D. Cam #7	50-51
		E. X4 Win (Feature Game)	51			F. X2 Win (Feature Game)	51
		G. XI / 2 Win (Fea. Game)	51				
		A. Mixer Unit		8.	AS-982-61	Tilt Switch & Brkt.	61
		B. Yellow Score Unit			ASW-A1-25	Switch	61
		C. Dbl. Feature Unit		9.	AS-1022-141	Dble. Feature Stepping Unit Sw. & Coil Function Chart	26
		D. Trip Relay Bank				Contact Plate Disc Function Diagram	36
		E. 7 Unit Relay Bank - Top (Mixer Cam #2)		10	AS-1110-48	Timer Unit Assembly Sw. & Coil Function Chart	26-27
1.	E-300-632	5 Unit Search Relay Bank Relay Function Chart (Top - Bottom)				Contact Plate Disc Function Diagram	37
		A. No. 1 Search Relay . .	18	11	AS-873-47	Reflex Unit Sw. & Coil Function Chart	27
		B. No. 2 Search Relay . .	18				
		C. No. 3 Search Relay . .	18	12	AS-2409-22	Trip Relay Bank (18) Relay Function Chart (Top - Bottom):	
		D. No. 4 Search Relay . .	18			A. All 4 Stars- 600 Win .	42
		E. No. 5 Search Relay . .	18			B. All 4 Stars - 300 Win .	43
2.	AS-1020-61	Mixer & Spotting Unit Assy. Mixer Unit Assy. & Function Chart	20-21			C. Any 3 Stars Fea. (Red Letter)	43
		Spotting Disc Layout & Wiper Unit Function Guide . .	22-23			D. Any 2 Stars Fea. (Red Letter)	43
3.	AS-1022-138	Yellow Score Unit Assy. Sw. & Coil Function Chart	25-26			E. Green Dbl. Fea. .	43-44
		Contact Plate Disc Function Diagram	33			F. Yellow Dbl. Fea. .	44
4.	AS-1022-104	Red Score Unit Assy. Sw. & Coil Function Chart	26			G. Blue Double Fea. .	44
		Contact Plate Disc Function Diagram	34			H. Red Double Fea. .	44
5.	AS-1022-105	Blue-Green Score Unit Sw. & Coil Function Chart	26			I. Tilt	44-45
		Contact Plate Disc Function Diagram	35			J. Extra Ball #1	45
6.	E-300-677	7 Unit Relay Bank - Top Relay Function Chart (L-R):				K. Extra Ball #2	45
		A. Scores Lock Relay . .	48			L. Red Roll-Over Fea.	45-46
		B. Play Scores Relay . .	48			M. Yellow Roll-Over Fea.	46
		C. Feature Lock Relay .	48			N. Select Before 2nd Ball Fea. (Mystic Lines) .	46
		D. Play Feature	49			O. Select Before 3rd Ball Fea. (Mystic Lines) .	46
		E. Mixer #4	49			P. Select Before 4th Ball Fea. (Mystic Lines) .	47
		F. Mixer #2	49			Q. Select Before 5th Ball Fea. (Mystic Lines) .	47
		G. Mixer Cam #3	49			R. Select After 5th Ball Fea. (Mystic Lines) .	47
				13	E-300-678	2 Unit Relay Bank (new fea.) Relay Function Chart (Top - Bottom):	
						A. X-1 Feature Relay .	52
						B. X-2 Feature Relay .	52

ALWAYS GIVE MODEL AND PART NO. WHEN ORDERING SERVICE PARTS

PLAYFIELD PANEL UNIT LAYOUT & PAGE INDEX



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Note: This Photograph shows a bottom view of the playfield. All of the Top Playfield Ball Play & Appearance Items are listed in the Special Parts List located in the rear of this Manual.

1.	CA-638-91	Panel (painted)	61
	CA-1100-8	Arch - Front	61
	CA-1103	Arch - Guide Strip	61
	CA-1104	Arch - Top	61
	AS-1315	Ball Gate & Switch Assy.	53
	ASW-A2-5	Gate Switch	61
	AS-493-2	Ball Rebound Assy.	61
	R-115-4	Rebound Rubber.	61
	C-387-1	Red Roll-Over Button	45, 46, 61
	C-387-2	Yellow Roll-Over Button	46, 61
	ASW-A10-16	Roll-Over Sw. (2)	53
	E-125-5	Lamp (#55) Roll-Overs (2).	53
	E-120-67	Panel Light Sockets (under shutter panel) - 8 req'd	61
	E-125-2	Lamp (#47) - 8 req'd	61
2.	ASW-A1-30	Ball Runway Switch	53
3.	C-153	Red Plastic Ball Lift Cover	61

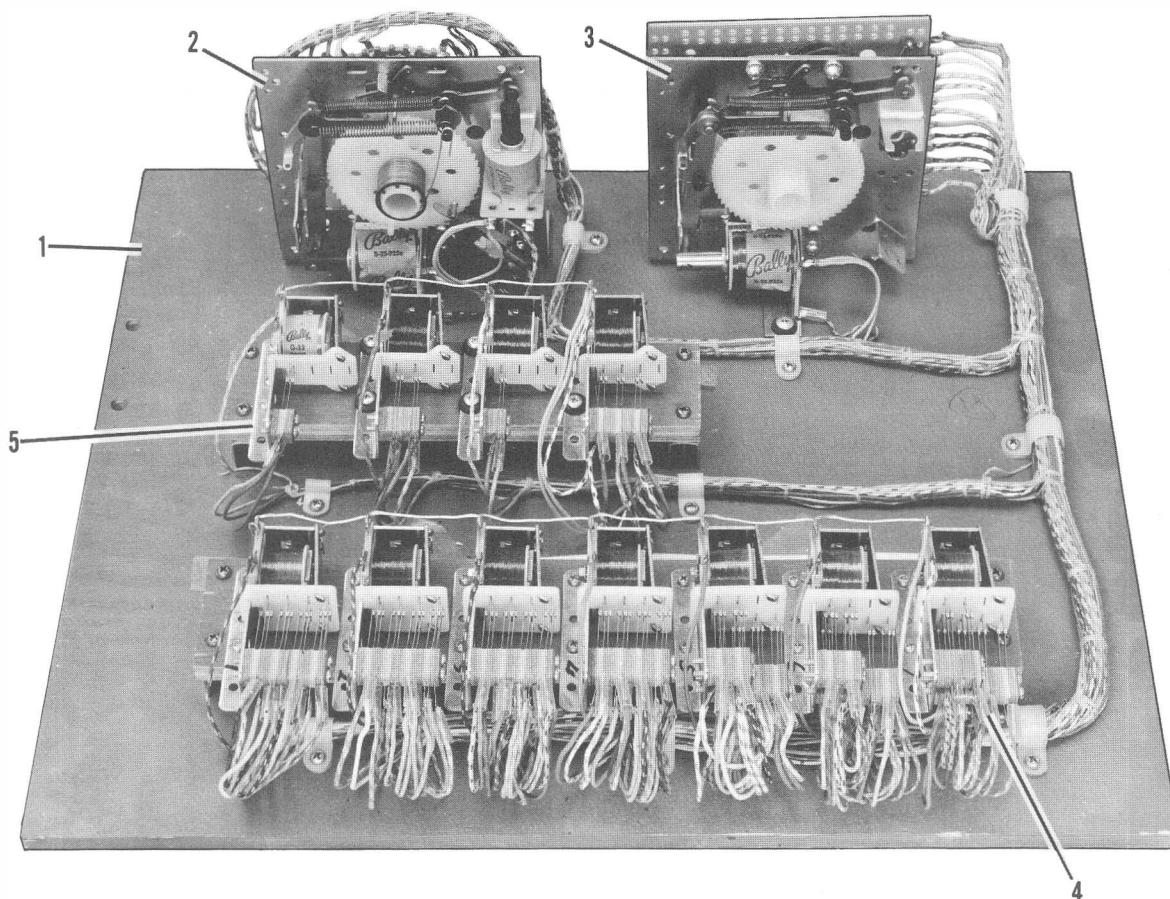
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Note: The following Ball Contactor Units are located in rows under every hole in the playfield (under shutter panel).

4.	A-1746-12	2 Hole Ball Contactor Unit	
	A-1746-13	3 Hole Ball Contactor Unit	
	A-1746-14	4 Hole Ball Contactor Unit	
	A-1746-15	5 Hole Ball Contactor Unit	
	A-1746-16	6 Hole Ball Contactor Unit	
5.	A-1433-10	Shutter Assembly	
6.	AS-982-704	Panel Switches Function Chart	53
7.	AS-2662-60	Lifter Start Relay Sw. & Coil Function Chart	53
8.	AS-1433-10	Shutter Motor Assembly Sw. & Motor Function Chart	53-54
9.	AS-982-363	Sw. & Brkt. Assy. (operates on Shutter Cam #6) Switch Function Chart	54

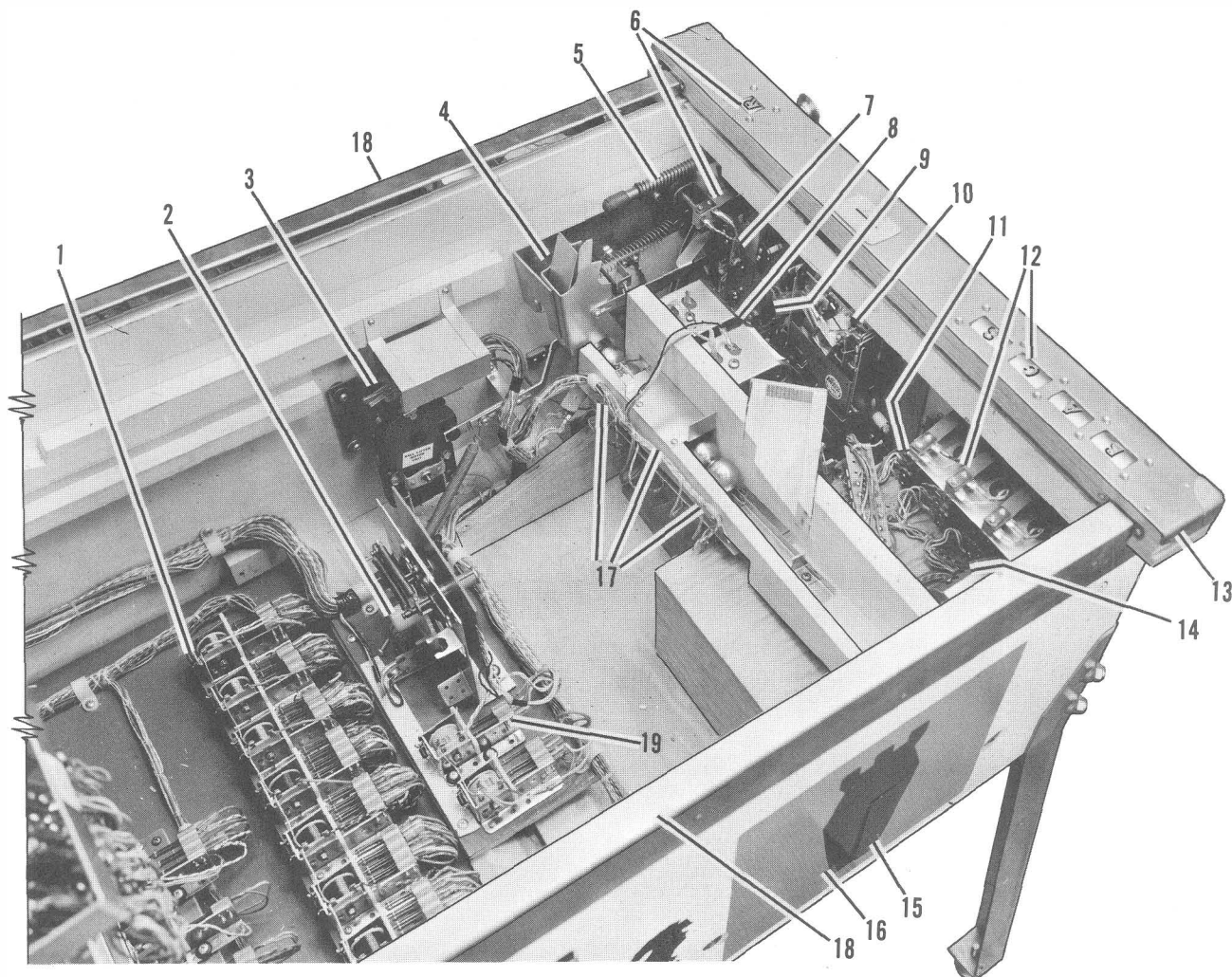
FRONT CAB. CONTROL BOARD

PAGE INDEX



Index No.	Part No.	Description	Page No. Ref.	Index No.	Part No.	Description	Page No. Ref.
<p>Note: This Photograph shows the Feature Game Mechanism Assembly which is located in the Lower Cabinet & is accessible thru a Side Door.</p> <p>This Control Board Assembly has the 4X-2X-1/2 Win Color Selection Units & the "Play For More Scores & Fea. Before Shooting 3rd Ball" Units. However, the "X-1 & 2" Feature Game Relays which are part of the feature game circuit are mounted on the Back Door.</p>				<p>Contact Plate Disc Function Diagram 38</p>			
1	AS-2216-121	Complete Mounting Board Assembly		4	E-300-640	7 Unit Relay Bank Sw. & Coil Function Chart (Left to Right):	
						A. Blue Selection Relay	57
						B. Green Selection Relay	57
						C. Yellow Selection Relay	57
						D. Red Selection Relay	57-58
						E. No. 3 "C" Relay	58
						F. No. 2 "C" Relay	58
						G. No. 1 "C" Relay	58
2	AS-1022-139	"X" Feature Unit Sw. & Coil Function Chart	27	5	E-300-635	4 Unit Relay Bank Switch & Coil Function Chart (Left - Right):	
		Contact Plate Disc Function Diagram	39			A. Step Control Relay	59
						B. P. 1 Relay	59
						C. P. 2 Relay	59
						D. P. 3 Relay	59
3	AS-827-481	Double Feature Unit (2X, 4X) Sw. & Coil Function Chart	27				

FRONT CABINET UNIT LAYOUT & PAGE INDEX



Index No.	Part No.	Description	Page Ref. No.	Index No.	Part No.	Description	Page Ref. No.
1	AS-2216-121	Cabinet Mounting Bd. Assy. Note: The above Mounting Board contains the Feature Game Mechanism. This Unit is completely covered on the previous Page.		11	AS-982-915	Red, Blue & Green Button Sw. & Brkt. Assy. Switch Function Chart . . .	9
2	AS-1358-22	Coin Unit Assembly Sw. & Coil Function Chart	27	12	AS-982-916	"A", "B", "C" & Selector Button Sw. & Brkt. Assy. Sw. Function Chart . . .	9
3	AS-1139-29	Ball Lifter Motor Assy. Motor & Sw. Function Chart	56	13	AS-1305-58	Front Molding Assy. Button Parts List	61
4	AS-186-11	Ball Lifter Assembly		14	E-130-10	Coin Counters (Total Replay & Total Plays)	
5	AS-187-17	Ball Shooter Assembly . .	61	15	CA-1105-5	Side Door (Cash Box)	
6	AS-982-759	"R" Button Sw. & Brkt. Assy. Switch Function Chart . .	9	16	CA-1119-43	Hawaii Front Cabinet Unit	
7	ASW-A1-26 } ASW-A2-9 }	Manual Ball Lift Sw. (2 unit) Switch Function Chart . .	9	17	AS-1145-51	Ball Trough & Sw. Assy. Switch Function Chart . .	55
8	E-130-10	Coin Counters (key play & coin plays)	56	18	P-921-39	Left Side Chrome Glass Molding	
9	AS-982-944	Yellow Button Sw. & Brkt. Assembly Switch Function Chart . .	9		P-921-40	Right Side Chrome Glass Molding	
10	AS-277-144	Coin Sw. & Rejector Mt. Assy.		19	E-300-637	2 Unit Relay Board Assy. Switch & Coil Function Chart (L-R)	
	M-1400-Series	Slug Rejector (Specify coin denomination & country) .	61			Ball Detector Relay . . .	55
						R Button Relay	55

CONTROL BUTTON SWITCHES

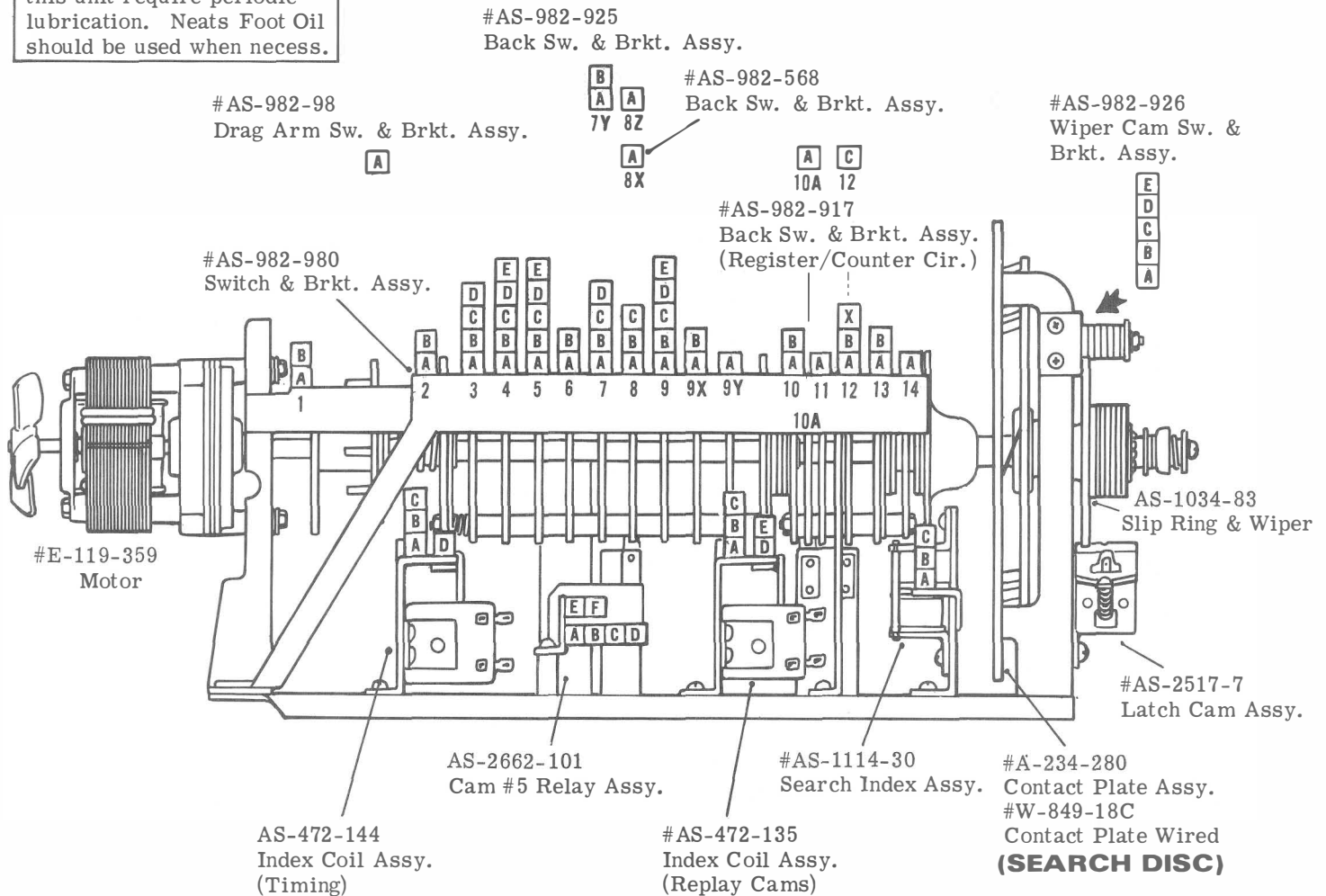
Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
"A" BUTTON N.O.	ASW-A1-24	C-18	45-5 78-12	Green-White Orange-Black	Completes a circuit to "Mystic Lines "A" Motor (when lit).
"B" BUTTON N.O.	ASW-A1-24	C-18	48-5 58-7	Green-Black White-Black	Completes a circuit to Mystic Lines "B" motor & relay coil (when lit).
"C" BUTTON N.O.	ASW-A1-24	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-A1-24	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-A1-22	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-A1-26	C-13	91-1 36-3	Gray-Red Yellow-Brown	Completes an auxill. circuit to the Ball Lifter Motor
2. N.C.	ASW-A2-9	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-A1-57	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-A1-58	D-4	18-6 63-2	Red-Black Brown-Yellow	Completes an extra ball circuit to Start Relay.
3. N.C.	ASW-A2-30	B-11	20-2 85-7	Blue Black-White	Opens a lock-in circuit to Red Button Relay.
RED BUTTON 1. N.O.	ASW-A1-93	C-12	10-2 85-7	Red Black-White	Completes a circuit to Red Button Relay Coil
2. N.O.	ASW-A1-94	E-4	50-2 63-2	White Brown-Yellow	Completes a circuit to the Start Relay Coil
3. N.C.	ASW-A2-58	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-A2-33	D-55	51-9 57-13	White-Red White-Orange	Opens circuit to the Blue Button (Scores)
2. N.O.	ASW-A1-61	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-A2-33	D-55	51-9 81-13	White-Red Black-Red	Opens circuit to the green button (features)
2. N.O.	ASW-A1-61	C-55	60-13 85-15	Brown Black-White	Completes circuit to Play Scores Relay
3. N.O.	ASW-A1-62	E-4	50-2 63-2	White Brown-Yellow	Completes a circuit to Start Relay Coil

Note: On the Red, Green & Blue Button Circuit Button Circuit you will notice that if the new "Play for More Scores & Fea. Before Shooting 3rd Ball" Feature is lit ("X" Fea. Disc closed at top) the circuit will remain energized until 3rd ball is shot.

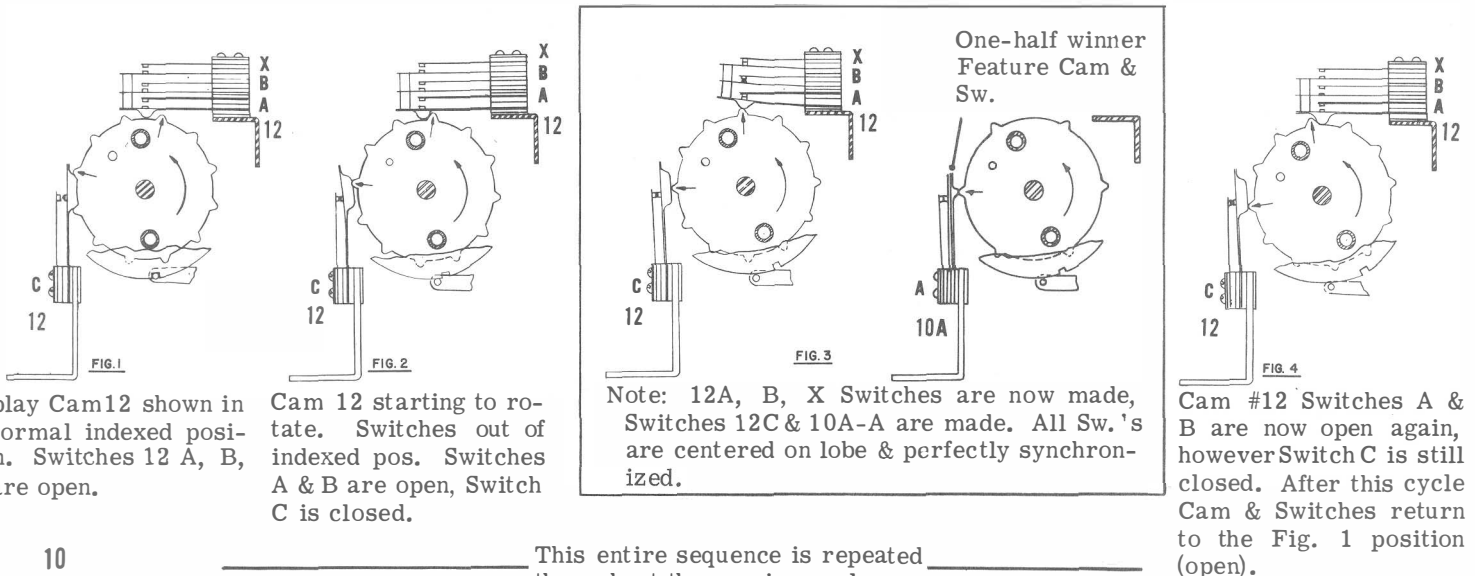
CONTROL UNIT

Control Unit (#AS-798-116ND) Pictorial View

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



The correct adjustment & synchronization of the Switches controlled by Cam No.'s 10A & 12 is vitally important to the Replay Counter Circuit. Out of adjustment Back Switches (12-C & 10A-A) can cause the four Replay Counters to become overloaded & burn out (affects the Printed Circuit Disc). Figure 3 shows these Cam Switches in a proper "Made" position. The Back Switches are adjustable. Note that the 12-C switch closes first & opens last. Cam Switch 12X is used for our testing purposes only.



CONTROL UNIT FUNCTION CHART

Switch/Coil	Part No.	Location On Diagram	Wire No.	Wire Color	Function
Motor	E-119-359	E-1	60P 50P	Brown	Operates unit thru Replay Reset Re. Timer Cam Index # 16A & open at 8th Timer Unit Sw.
Cam 1 N.O. Sw. A	ASW-C2-3	E-9	65 36-9	Brown-White Yellow-Brown	Completes Select Before 5th Ball Timer Unit Step-Up.
Cam 1 N.C. Sw. B	ASW-C1-25	A-6	85-1 45-18	Black-White Green-White	Opens circuit to Mixer Latch Relay
Cam 2 N.C. Sw. A	ASW-C2-28	F-8	30 25-9	Yellow Blue-White	Opens circuit to Multiplay (plays per coin) Relay
Cam 2 N.C. Sw. B	ASW-C2-2	D-35	21-3 61-7	Blue-Red Brown-Red	Opens circuit to "P-3" Relay
Cam 3 N.C. Sw. A	ASW-C1-3	G-4	30 48-2	Yellow Green-Black	Opens entire game start circuit (Coin, Reset, Start).
Cam 3 T. Sw. B	ASW-C3-3	C-55	60-13 57-13 21-3	Brown White-Orange Blue-White	Directs Blue Button play to hold-in circuit for Play Scores Relay
Cam 3 T. Sw. C	ASW-C3-3	C-54	74-16 81-13 21-3	Orange-Green Black-Red	Directs Green Button play to hold-in circuit for Play Features Relay
Cam 3 T. Sw. D	ASW-C3-3	C-40	93-7 78-4 91-7	Gray-Yellow Gray-Black Gray-Red	Directs Total Replay Meter circuit to Total Play Meter Circuit.
Cam 4 N.O. Sw. A	ASW-C1-3	D-67	30 98-1	Yellow Gray-Black	Completes circuit to Spotting Cams Index Coil.
Cam 4 N.O. Sw. B	ASW-C1-8	C-5	27-9 80-2	Blue-Orange Black	Completes a Replay Circuit to the Coin Unit Step-Up & Coin Meter.
Cam 4 T. Sw. C	ASW-C3-3	D-5	14-5 13-9 50 J	Red-Green Red- Yellow White	Directs a Coin Sw. Circuit to the Tilt Trip Coil. Check adjust. sheet for converting game for plays per coin via 50 J Wire.
Cam 4 LUG Sw. D	ASW-AO-9	D-5	10-5	Red	Solder 50 J Wire (4-C) to this Lug for 1 Play per Coin.
Cam 4 Lug Sw. E	ASW-AO-9	D-5	15-13	Red-Black	Solder 50 J Wire (4-C) to this Lug for multiplay per coin (ex. 25¢ for 5 plays).
Cam 5 N.O. Sw. A	ASW-C1-3	A-25	27-20 23-7	Blue-Orange Blue- Yellow	Completes a circuit to Extra Ball Step-Up Coil via the Reflex Disc.
Cam 5 N.O. Sw. B	ASW-C1-8	C-26	78-4 91-6	Orange-Black Gray-Red	Energizes the Anti-Cheat Relay
Cam 5 N.O. Sw. C	ASW-C1-8	C-29	85-4 10-7	Black-White Red	Completes a direct circuit to the Mystic Lines Unit Disc & Selection Fea. Disc (Fea. Steps)
Cam 5 N.O. Sw. D	ASW-C1-8	A-33	21-3 50-3	Blue-Red White	Completes a circuit to Cam #5 Relay (C. U. Unit).
Cam 5 N.C. Sw. E	ASW-C2-4	F-54	21-3 40-15	Blue-Red Green	De-energizes the Feature Lock Relay & Scores Lock Relay.
Cam 6 N.C. Sw. A	ASW-C1-4	D-30	14-8 18-16	Red-Green Red-Black	Opens entire Feature Game Step-Up Circuit.
Cam 6 N.C. Sw. B	ASW-C1-8	E-26	51-5 45-2	White-Red Green-White	Opens the Extra Ball Unit Step-Up Circuit.
Cam 6 N.O. Sw. C	ASW-C2-4	H-53	30 58-5	Yellow White-Black	Energizes the "Play for More Scores & Fea. Before Shooting 3rd Ball" Game (X Fea.).
Cam 7 N.O. Sw. A	ASW-C1-3	C-56	54-12 10-17	White-Green Red	Completes circuits to Score Disc Step-Ups & BB Step Re.
Cam 7 N.O. Sw. B	ASW-C1-8	F-56	81-11 63-4	Black-Red Brown-Yellow	Completes circuits to the Score Step-Up Discs.
Cam 7 N.O. Sw. C	ASW-C1-8	E-37	85-4 80-17	Black-White Black	Completes a Circuit to the new "X" Fea. Step-Up Unit.
Cam 7 N.O. Sw. D	ASW-C1-8 RESISTOR	E-3	30 90-5	Yellow Gray	Completes circuits to Cam 7 Relay, Reflex Play Magnet & Total Play Meter at onset of a game.

CONTROL UNIT FUNCTION CHART

Switch/Coil	Part No.	Location On Diagram	Wire No.	Wire Color	Function
Cam 7 N.O. Sw. 7Y (A)	ASW-C1-3 (Back Sw.)	E-56	25-16 51-6	Blue-White White-Red	Completes a circuit to the Mixer #3 Disc for Score Step-Ups
Cam 7 N.O. Sw. 7Y (B)	ASW-C1-9	E-56	60-18 51-6	Brown White-Red	Completes a circuit to the Mixer #3 Disc for score step-ups.
Cam 8 N.O. Sw. A	ASW-C1-3	B-25	27-20 25-4	Blue-Orange Blue-White	Completes a circuit to the Extra Ball Unit Step-Up Coil.
Cam 8 N.O. Sw. B	ASW-C1-8	E-56	51-6 13-13	White-Red Red-Yellow	Completes a circuit to the Mixer #3 Disc (Wiper) for scores step-up.
Cam 8 N.O. Sw. C	ASW-C1-8	C-56	54-12 20-6	White-Green Blue	Completes circuits to the Scores Step-Up & BB Relay.
Cam 8 N.O. Sw. X (A)	ASW-C1-10 (Back Sw.)	B-19	21-3 18-19	Blue-Red Red-Black	Completes a circuit to the Mixer Cam #3 Relay.
Cam 8 N.O. Sw. Z (A)	ASW-C1-3 (Back Sw.)	E-55	25-16 51-6	Blue-White White-Red	Completes a circuit to the Mixer #3 Disc for score step-ups.
Cam 9 N.O. Sw. A	ASW-C1-4	D-27	18-2 36-19	Red-Black Yellow-Brown	Completes a circuit to the Extra Ball Step-Up Unit.
Cam 9 N.O. Sw. B	ASW-C1-3	A-33	52-11 70	White-Blue Orange	Completes a circuit to energize the "All 4 300/600 Feature" Trips.
Cam 9 N.O. Sw. C	ASW-C1-3	B-32	61-10 41-5	Brown-Red Green-Red	Completes a circuit to energize the "Any 2" Fea. Trip (Red Letter).
Cam 9 N.O. Sw. D	ASW-C1-3	D-31	51-21 90-15	White-Red Gray	Completes a circuit to the Spotting Disc for Feature Step-Ups.
Cam 9 T. Sw. E	ASW-C3-3	B-21	63-9 71-10 58-2	Brown-Yellow Orange-Red White-Black	An alternating Blue or Green Scoring circuit which energizes the Mixer #4 Relay during Fea. Game Play (1/2X - 2X - 4X).
Cam 9X N.O. Sw. A	ASW-C1-3	D-58	83-4 58-10	Black-Yellow White-Black	Energizes the Red Score Step-Up.
Cam 9X N.O. Sw. B	ASW-C1-8	A-66	15-16 45-16	Red-White Green-White	Completes scoring circuits (16 - 64) to the 2 Extra Step Relay.
Cam 9X N.O. Sw. C	ASW-C1-8	A-62	65-6 31-5	Brown-White Yellow-Red	Completes scoring circuits (12) to the 1 Extra Step Relay.
Cam 9Y N.O. Sw. A	ASW-C1-4	F-39	21-3 36-13	Blue-Red Yellow-Brown	Completes a scoring circuit to Replay Register Step-Up Coil.
Cam 10 N.O. Sw. A	ASW-C1-4	B-44	63 90-1	Brown-Yellow Gray	1 to 12 Multiplier Cam Sw. which completes determine a winners score.
Cam 10 N.O. Sw. B	ASW-C1-8	B-41	27-17 23-17	Blue-Orange Blue-Yellow	Completes an All 4 Star 600 Win Circuit to step Replay Register (1 to 12 ratio).
Cam 10A N.O. Sw. A	ASW-C1-46	C-38	61-18	Brown-Red	Completes a 1/2X Feature Game win to Replay Register Step-Up.
Cam 11 N.O. Sw. A	ASW-C1-3	B-44	57 90-1	White-Orange Gray	Completes scoring circuits for multiple win action (1 x 6 ratio) which achieves correct score on Replay Reg. Step-Ups.
Cam 12 N.O. Sw. A	ASW-C1-3	B-44	45 90-1	Green-White Gray	Completes scoring circuits (1 to 1 ratio) for win. (Replay Reg. Step-Ups).
Cam 12 N.O. Sw. B	ASW-C1-8	C-38	41-14 63-14	Green-Red Brown-Yellow	Completes win circuit to Replay Register Step-Up Coil.
Cam 12 N.O. Sw. X	ASW-C1-8				NOT USED
Cam 12 N.O. Sw. C	ASW-C1X-9	E-37	21-3 23-13	Blue-Red Blue-Yellow	Protective Switch which prevents arcing on Replay Counter Discs.
Cam 13 N.O. Sw. A	ASW-C1-3	B-44	52 90-1	White-Blue Gray	Completes scoring circuits to multiple win action (1-4 ratio) for Replay Step-Ups Score.
Cam 13 N.O. Sw. B	ASW-C1-9	C-41	10-16 27-7	Red Blue-Orange	Completes an All 4 Star 300 Win Circuit to Step Replay Register (1 to 4 ratio).
Cam 14 N.C. Sw. A	ASW-C1-4	F-42	74 31-11	Orange-Green Yellow-Red	Opens initial color zone & star winner search circuit.

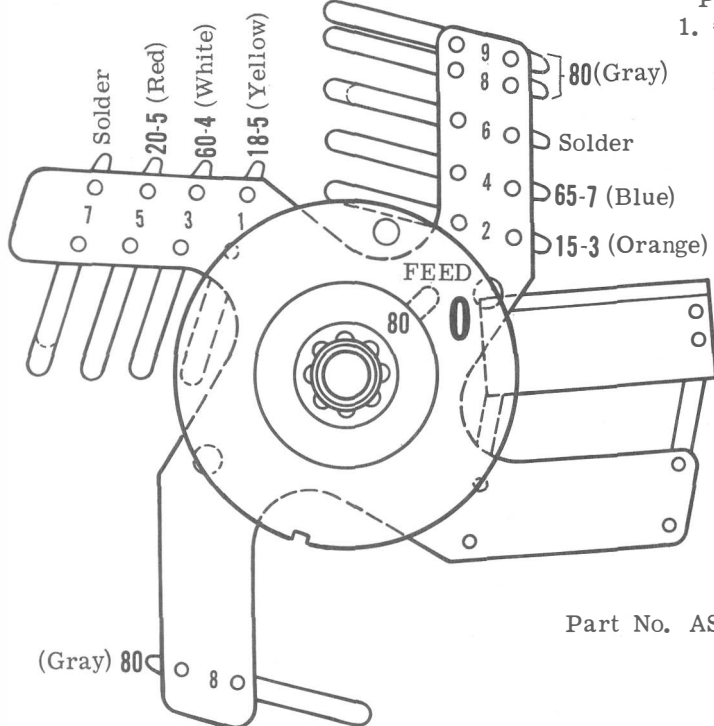
CONTROL UNIT FUNCTION CHART

Switch/Coil	Part No.	Location On Diagram	Wire No.	Wire Color	Function
TIMING CAM INDEX COIL	BF-27-1250	A-7	70 45-18	Orange Green-White	Energized thru Start Relay Switches & Release Timer Cams for play cycle.
Sw. A N.O.	ASW-A1-43	G1	20P 60P	Blue Brown	Completes circuit to Control Unit Motor & Mixer Unit Motor.
Sw. B N.C.	ASW-A2-18	D-12	30 10-2	Yellow Red	Opens circuit to Red & Yellow Buttons.
Sw. C N.C.	ASW-A2-35	E-5	91-13 27-9	Gray-Red Blue-Orange	Opens circuit to Coin Lockout Magnet.
Sw. D N.O.	ASW-A1-56	C-66	57-4 21-3	White-Orange Blue-Red	Completes lock-in circuit to BB Step Re. & 1-2 Extra Step Re. (score steps).
#5 CAM RELAY COIL	G-31-1800	A-33	70 50-3	Orange White	Energized via C.U. Cam #5D during every play cycle.
Sw. A N.O.	ASW-R1-3	E-10	65-2 83-1	Brown-White Black-Yellow	Completes a circuit to the Timer Unit Reset Coil during Extra Ball Play.
Sw. B N.O.	ASW-R1-3	F-28	53-16 21-3	White-Yellow Blue-Red	Completes a feed circuit the Double Feature Unit Disc for 1/2X, 2X & 4X play.
Sw. C N.C.	ASW-R2-4	B-20	21-3 18-7	Blue-Red Red-Black	De-energizes Mixer #4 Relay (lock-in circuit).
Sw. D N.C.	ASW-R2-4	D-23	21-3 13-3	Blue-Red Red-Yellow	De-energizes Mixer #2 Relay (lock-in circuit).
Sw. E N.C.	ASW-R2-4	C-66	57-4 36-16	White-Orange Yellow-Brown	De-energizes lock-in circuit to BB Step Re & 1-2 Extra Step Relays.
REPLAY CAM INDEX COIL	CF-28-1025	A-37	70 40-19	Orange Green	Energized by Search Index Cam Sw. A & release cams to score winners.
Sw. A N.O.	ASW-A1-11	D-37	23-13 80	Blue-Yellow Black	Completes lock-in circuit to this Coil.
Sw. B N.O.	ASW-A1-54	F-43	31-11 74	Yellow-Red Orange-Green	Completes a winners search circuit to the Score Discs via the #3 Search Re.
Sw. C N.C.	ASW-A2-27	B-37	15-2 13-6	Red-White Red-Yellow	Opens initial pull-in circuit to the Search Index Coil.
Sw. D N.O.	ASW-A1-56	C-38	81-10 80	Black-Red Black	Completes winner circuit to step Replay Register, Reflex & Meter.
Sw. E N.C.	ASW-A2-29	D-9	85-8 78-6	Black-White Orange-Black	Opens a circuit to the Timer Unit Step-Up Coil.
SEARCH INDEX COIL	EA-29-950	A-37	15-2 70	Red-White Orange	Energized by Replay Search Winners Circuit & stops Search Wipers to score winners.
Sw. A N.O.	ASW-A2-28	C-36	60 40-19	Brown Green	Completes replay winners circuit to energize Replay Cam Index Coil.
Sw. B N.C.	ASW-A1-55	C-4	61-8 53-13	Brown-Red White-Yellow	De-energizes Start Relay.
Sw. C LUGS	LUG CONN.	C-37	21-3 23-13	Blue-Red Blue-Yellow	Lug connection to C. U. #12 Cam Switch C.
SEARCH WIPER LOCK MAGNET (LATCH CAM COIL)	FD-30-1300	A-17	70 23-16	Orange Blue-Yellow	Energized thru "R" Button to register replays.
WIPER CAM SWITCHES					
Sw. A N.C.	ASW-C1-16	D-17	14-4 57-12	Red-Green White-Orange	Opens circuit to Mystic Lines Feature Motors.
Sw. B N.C.	ASW-C1-17	B-4	53-13 13-16	White-Yellow Red-Yellow	Opens circuit to Start Relay.
Sw. C N.C.	ASW-C1-17	A-17	52-9 23-16	White-Blue Blue-Yellow	De-energizes Search Wiper Lock Magnet.
Sw. D N.C.	ASW-C1-17	C-41	38-20 43-15	Yellow-Black Green-Yellow	De-energizes the Feature Game 2X or 4X zone win multiplier.
Sw. E N.O.	ASW-C2-7	A-39	41-14 61-14	Green-Red Brown-Red	Completes a win circuit to the Replay Reflex Magnet.

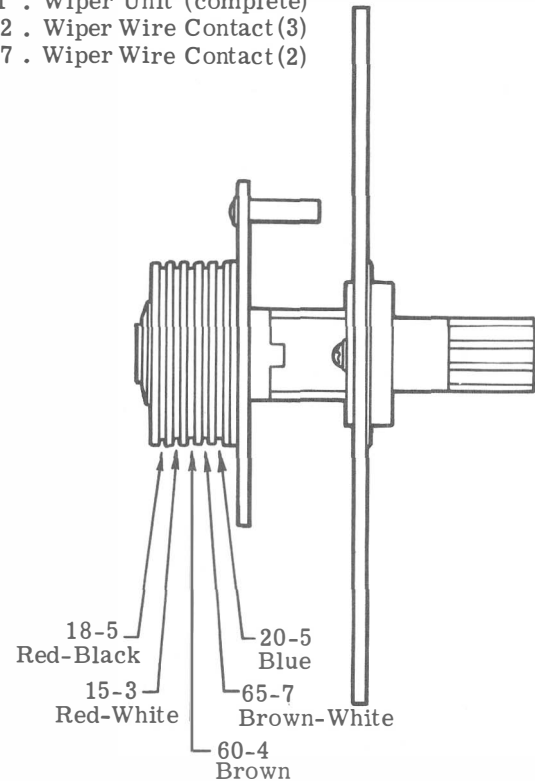
C. U. SEARCH DISC WIPER UNIT

Note: The wire type Wiper Unit that rides in the Slip Ring grooves have the following Part No.'s.

1. #AS-910-21 . Wiper Unit (complete)
 - A. M-412-2 . Wiper Wire Contact (3)
 - B. M-412-7 . Wiper Wire Contact (2)



Part No. AS-1034-83



FUNCTION CHART

Note: The Function Chart starts with Arm "O", inside contact row to outside row, & other arms follow in a clockwise pattern.

Contact Row No.	Wire No.	Wire Color	Location on Diagram	Function
2. Orange	15-3	Red-White	H-47	Winners search feed for Search Relay #4
4. Blue	65-7	Brown-White	H-47	Winners search feed for Search Relay #2
6. Two Wipers are soldered together				Bridges Search Disc Internal Wiring
8. & 9.	80	Gray	D-36	Completes a winners circuit to the Search Index Coil, Replay Register, Reflex Replay & the Zone Replay & Scoring Units.
1. Yellow	18-5	Red-Black	H-48	Winners Search feed for Search Relay #5.
3. White	60-4	Brown	H-47	Winners search feed for Search Relay #3
5. Red	20-5	Blue	H-46	Winners search feed for Search Relay #1.
7. Two Wipers are soldered together				Bridges search disc internal wiring.
8. Gray	80	Gray	D-36	Completes a winners circuit to the Search Index Coil, Replay Register, Reflex Replay & the Zone Replay & Scoring Units.

CONTROL UNIT SEARCH DISC

Directs 4 Star 600 win to Replay Counter & Multiple Feature Win Circuit (Diag. C-41)

Green Zone Winner Replay Step-Up & Multi Fea. Win Circuit (Diag. C-51)

Yellow Zone Winner Replay Step-Up & Multiple Feature Win Circuit (Diag. D-44)

Red 3-4-5 In-Zone Winner Replay Step-Up & Multi. Fea. Win Circuit (Diag. D-45)

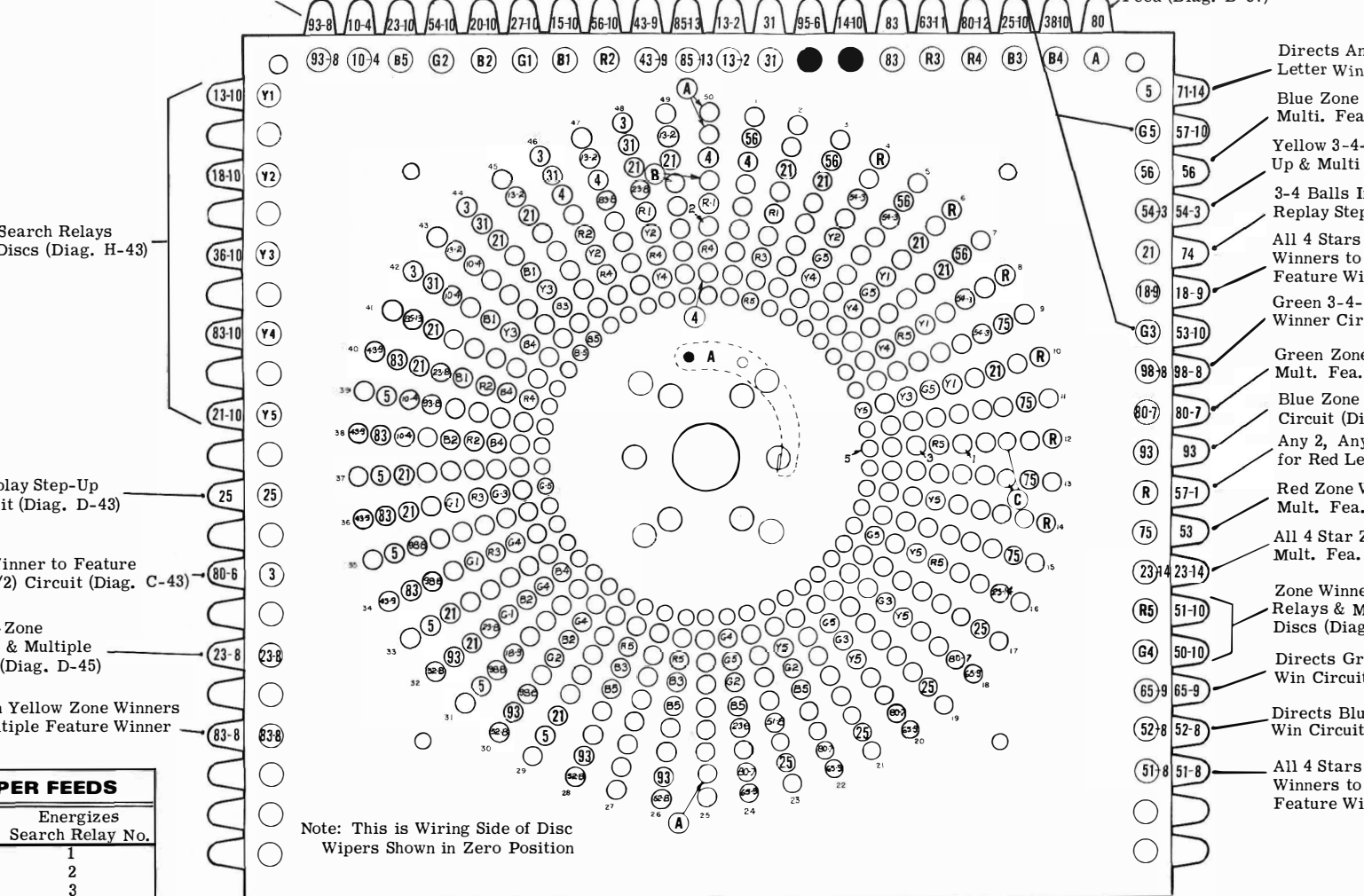
Zone Winner Lites Thru Search Relays & Mystic Lines A, B, C Discs (Diag. H-43)

All Winners Scoring Feed (Diag. D-37)

Zone Winner Lites, thru Search Relays & Mystic Lines A, B, C Discs (Diag. H-43)

Blue Zone Winner Replay Step-Up & Multiple Feature Winner (Diag. E-46)

All 4 Stars & 4 Balls in Red Zone Winners to Replay Counter & Fea. Win Circuit (Diag. D-45)



Directs Any 2, Any 3 Star Win to Red Letter Win Relay #1, #2. (Diag. C-52)

Blue Zone Winner Replay Step-Up & Multi. Fea. Win Circuit (Diag. C-48)

Yellow 3-4-5 In-Zone Winner Replay Step-Up & Multi Fea. Win Circuit (Diag. E-42)

3-4 Balls In-Zone Winner feed circuit to Replay Step-Up & Multi. Fea. Win Circuit

All 4 Stars & 4 Balls in Blue Zone Winners to Replay Step-Up & Multi. Feature Win Circuit.

Green 3-4-5 in - Zone Winner Circuit (Diag. E-49)

Green Zone Winner Replay Step-Up & Multi. Fea. Win Circuit (Diag. D-50)

Blue Zone Winner Replay Step-Up Circuit (Diag. D-48)

Any 2, Any 3 Star Winner for Red Letter Game

Red Zone Winner Replay Step-Up & Multi. Fea. Win Circuit (Diag. D-46)

All 4 Star Zone Winner Replay & Multi. Fea. Win Circuit (Diag. D-41)

Zone Winner Lites - Thru Search Relays & Mystic Lines A, B, C Discs (Diag. H-43)

Directs Green Zone Winner to Multi. Fea. Win Circuit & Replay Step-Up (Diag. C-50)

Directs Blue Zone Winner to Multi Fea. Win Circuit & Replay Step-Up (Diag. C-47)

All 4 Stars & 4 Balls in Green Zone Winners to Replay Step-Up & Multi. Feature Win Circuit (Diag. E-50)

Zone Winner Lites, thru Search Relays & Mystic Lines A, B, C Discs (Diag. H-43)

Yellow Zone Winner Replay Step-Up & Multi. Fea. Win Circuit (Diag. D-43)

Directs Yellow Zone - Winner to Feature Win Relay (X4, X2, X1/2) Circuit (Diag. C-43)

All 4 Stars & 4 Balls In-Zone Winners Replay Step-Up & Multiple Feature Winner Circuit (Diag. D-45)

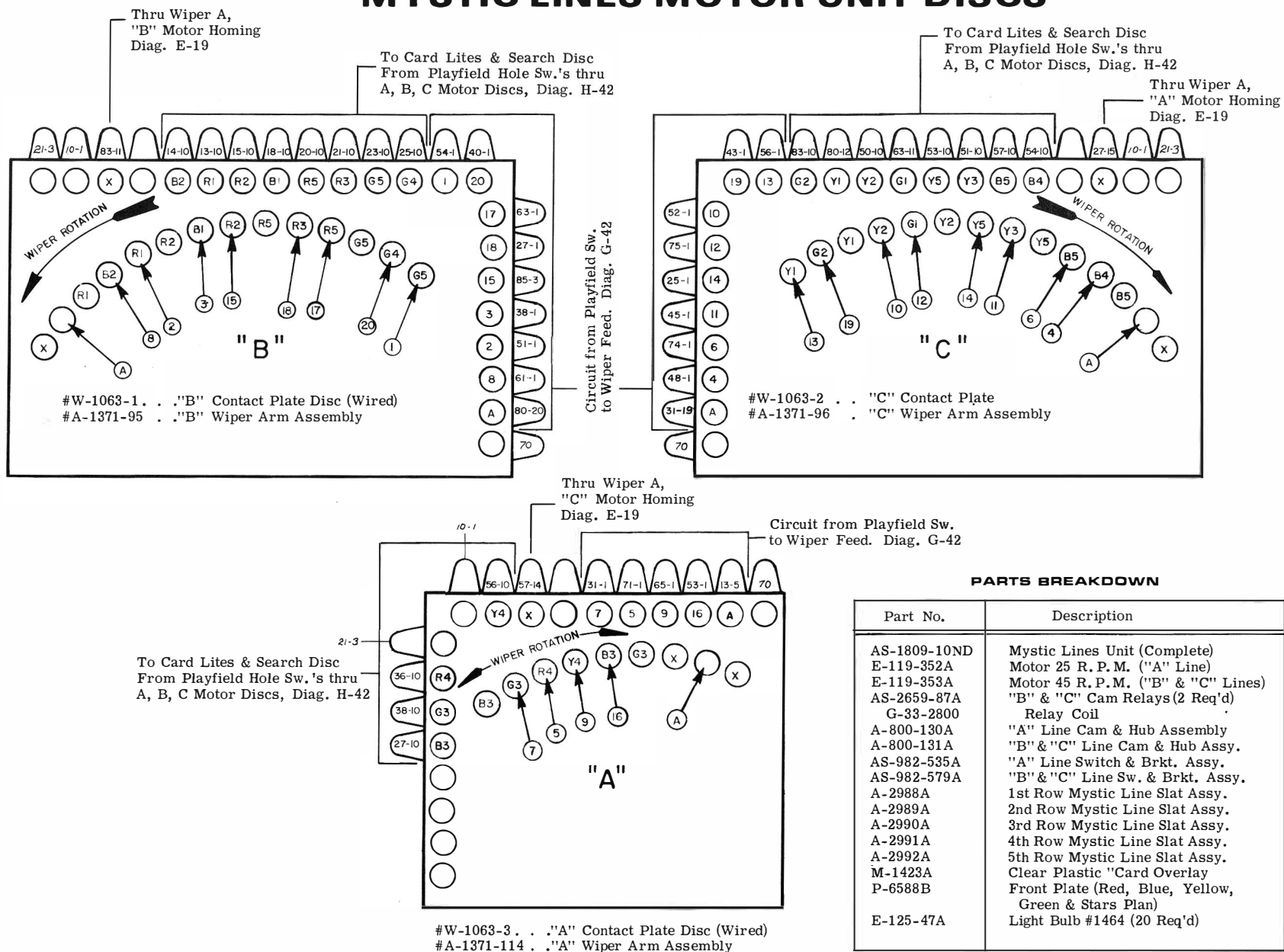
All 4 Stars, & 4 Balls in Yellow Zone Winners to Replay Step-Up & Multiple Feature Winner Circuit (Diag. E-42)

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

Note: This is Wiring Side of Disc
Wipers Shown in Zero Position

CONTROL UNIT WINNER SEARCH POSITIONS CHART

MYSTIC LINES MOTOR UNIT DISCS



CONTROL UNIT WINNER SEARCH POSITIONS CHART

CONTROL UNIT

WINNER SEARCH POS. CHART					
Red Wiper at Position	Wiper (1) Search Relay # 1	Wiper (2) Search Relay # 2	Wiper (3) Search Relay # 3	Wiper (4) Search Relay # 4	Wiper (5) 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

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-28-850	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-R1-8	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-28-850	J-47	50-9 65-7	White Brown-White	Same as #1 Search Relay Coil
1. N.O. (2nd Ball)	ASW-R1-8	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-28-850	J-47	50-9 60-4	White Brown	Same as #1 Search Relay Coil.
1. N.O. (3rd Ball)	ASW-R1-8	E-43	31-11 36-11	Yellow-Red Yellow-Brown	Same as #2 Search Relay Sw.
#4 SEARCH Relay Coil	G-28-850	J-47	50-9 15-3	White Red-White	Same as #1 Search Relay Coil.
1. N.O. (4th Ball)	ASW-R1-8	E-43	74 23-8	Orange-Green Blue-Yellow	Same as #2 Search Relay Sw.
#5 SEARCH Relay Coil	G-28-850	J-48	50-9 18-5	White Red-Black	Same As #1 Search Relay Coil.
1. N.O. (5th Ball - Extra Balls)	ASW-R1-8	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-119-352	A-18	70 13-5	Orange Red-Yellow	Energized thru "A" Button thru Mystic Lines Fea. Unit Disc (when lit)
1. N.O.	ASW-C2-2	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-119-353	A-18	70 80-20	Orange Black	Energized thru "B" Button thru Mystic Lines Fea. Unit Disc (when lit).
1. N.O.	ASW-C1-11	B-18	80-20 21-3	Black Blue-Red	Completes hold-in circuit to "B" Motor.
"C" CAM MOTOR	E-119-353	A-19	31-19 70	Yellow-Red Orange	Energized thru "C" Button thru Mystic Lines Fea. Unit Disc (when lit).
1. N.O.	ASW-C1-11	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-R1-4	B-19	25-6 31-19	Blue-White Yellow-Red	Opens circuit to "C" Button
2. N.C.	ASW-R1-4	B-18	40-13 45-5	Green Green-White	Opens circuit to "A" Button
3. N.C.	ASW-R1-4	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 31-19	Orange Yellow-Red	Energized thru "C" Button Circuit
1. N.C.	ASW-R1-4	B-18	13-5 40-13	Red-Yellow Green	Opens circuit to "A" Button
2. NC.	ASW-R1-4	J-44	54-7 50-9	White-Green White	Opens Circuit to Search Relays
3. N.C.	ASW-R1-4	B-18	80-20 48-5	Black Green-Black	Opens Circuit to "B" Button

CONTROL UNIT WINNERS REPLAY COUNTER CIRCUIT

CONTROL UNIT REPLAY CAMS SCORE DETERMINATION

This Chart shows the Control Unit Multiplier Cam Switches which multiply the Replay Counter Disc Replay Values during a color zone winner. This multiplier circuit goes thru Control Unit Replay Cam Switches to determine the winning score (reg. win): Cam 10 "A" (1 to 12 ratio), Cam 11 "A" (1 to 6 ratio), Cam 12 "A" (1 to 1 ratio), & Cam 13 "A" (1 to 4 ratio).

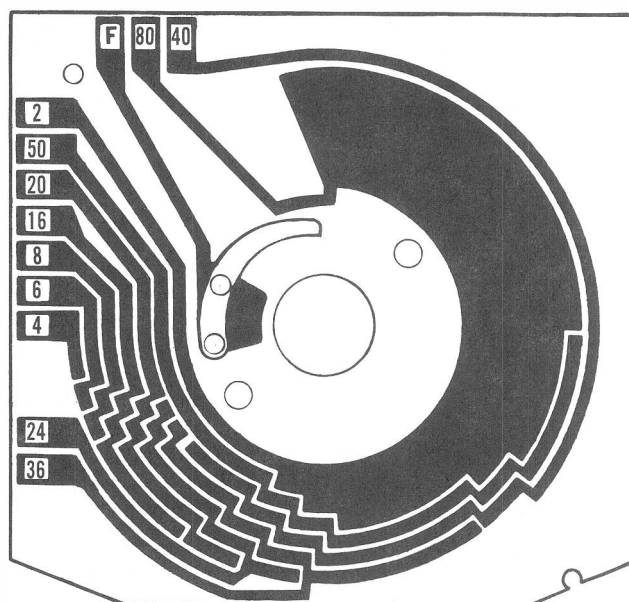
There is also the Feature Game Win Circuit (1/2X, 2X, 4X Win) which can alter a score after a normal win has been determined. This circuit goes thru the Color Zone Double Trips, the X4, X2 & X1/2 Win Relays & Multiple Unit Disc to determine the final score. The 1/2X Feature Win is reduced thru Control Unit Cam 10A, Switch "A" (backswitch) on the Replay Register Step-Up Circuit. Circuits on the multiplier unit disc multiply Double & Double-Double Feature Game Wins via the X2 & X4 Win Relays.

Referring to the Chart the top row is the Control Unit Cam Sw. & the Multiplication Ratio. In the Chart Squares is the score which is shown on the Game Backglass. The circled numbers are the Replay Counter Unit Disc's Replay Values (Check bottom chart). Circled Asterisk indicates that the circuit is effective thru the "open at 96th Step" Replay Counter Switch.

	12A x 1	12A x 1	12A x 1	11A x 6	12A x 1	13A x 4	11A x 6	13A x 4	11A x 6	10A x 12
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)

REPLAY COUNTER DISC SCORE 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	60-6	21-16	75-11

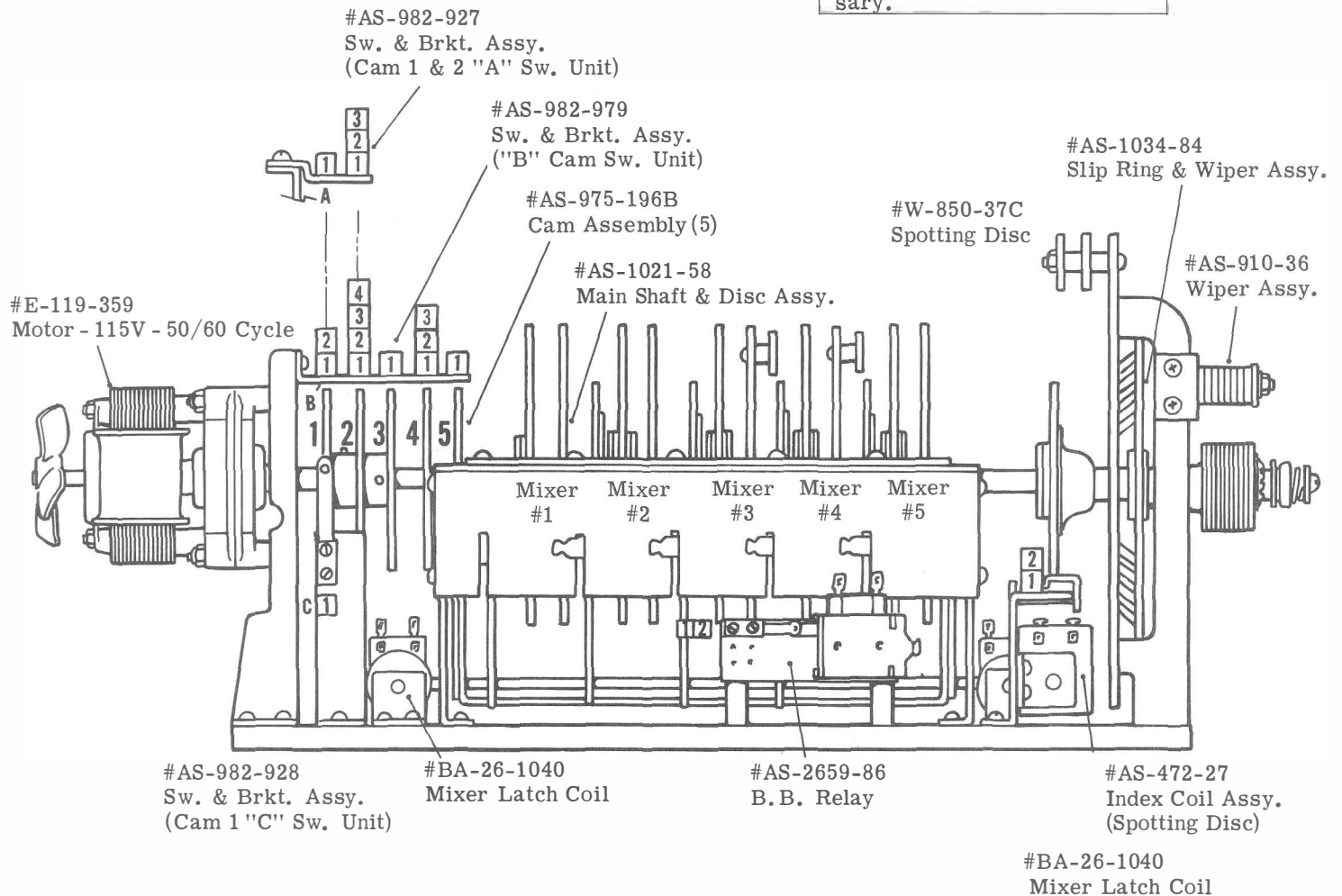


REPLAY COUNTER PARTS LIST

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

MIXER & SPOTTING UNIT

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



Note: All of the following Contact Plate Discs & Wiper Units are wired internally.

#W-850-37C	Spotting Disc	#W-1059-8	#3 Contact Plate Disc & Ring
#AS-1034-84	Slip Ring & Wiper	#W-1059-7	#3 Index Disc & Wiper
#W-1065-9	#1 Contact Plate Disc & Ring	#W-872-4	#4 Contact Plate Disc & Ring
#W-1065-7	#1 Index Disc & Wiper	#W-872-3	#4 Index Disc & Wiper
#W-871-6	#2 Contact Plate Disc & Ring	#W-1076-9	#5 Contact Plate Disc & Ring
#W-1058-6	#2 Index Disc & Wiper	#W-1076-8	#5 Index Disc & Wiper

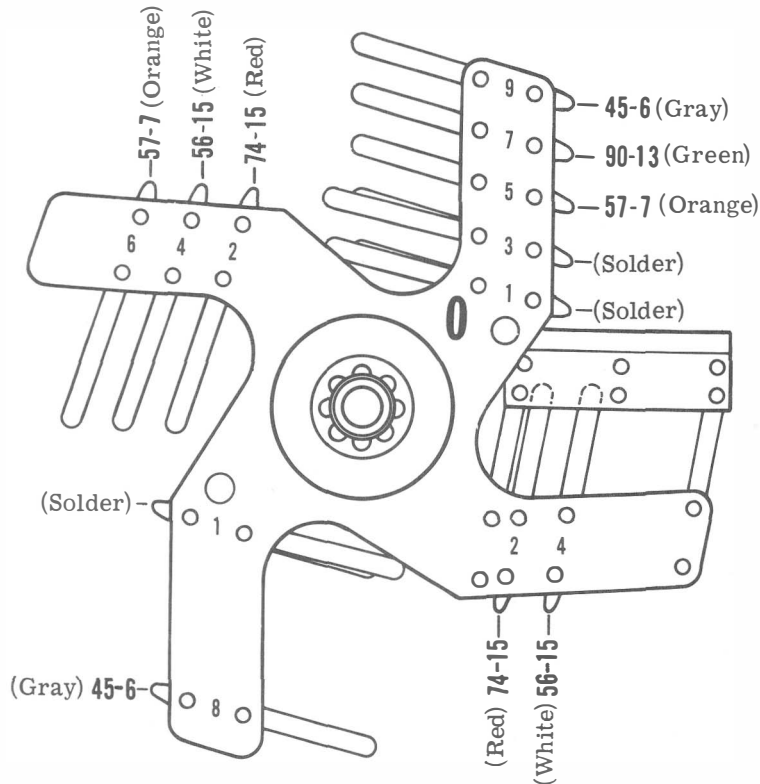
MIXER & SPOTTING UNIT

FUNCTION CHART

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
MOTOR	E-119-359	E-2	50P 60P	White Brown	Operated thru Replay Reset Relay
Cam 1 N.O. Sw. A(1)	ASW-C1-15 (Bottom Unit)	B-16	93-16 98-12	Gray-Yellow Gray-Black	Completes circuit to Double Selection Step-Up Coil (Change scores fea. game 2x, 4x)
Cam 1 N.O. Sw. B (1)	ASW-C1-15	C-16	74-10 71-9	Orange-Green Orange-Red	Completes a Selection Button Circuit to the Step Control Relay (2x - 4x steps)
Cam 1 N.O. Sw. B (2)	ASW-C1-8	H-51	83-7 58-5	Black-Yellow White-Black	Completes a circuit to the 3rd Ball "X" Fea. Lites.
Cam 2 N.O. Sw. A (1)	ASW-C1X-1	D-30	95-9 80-8	Gray-White Black	Completes a circuit to all Feature Play Step-Ups.
Cam 2 N.O. Sw. A (2)	ASW-C1X-2	E-23	40-18 52-5	Green White-Blue	Completes a Red Letter Win Circuit to step Features & Scores for next game.
Cam 2 N.O. Sw. A (3)	ASW-C1X-2	J-6	20 23-11	Blue Blue-Yellow	Completes circuit to all Feature Lites.
Cam 2 N.O. Sw. B (1)	ASW-C1X-2	C-3	75-2 53-7	Orange-White White-Yellow	Energizes (16 pulse) the Relay Register Reset (total reset).
Cam 2 N.O. Sw. B (2)	ASW-C1X-2	A-24	78 27-20	Orange-Black Blue-Orange	Completes a circuit to the Extra Ball Coil for extra steps.
Cam 2 N.O. Sw. B (3)	ASW-C1X-2	C-41	21-3 38-20	Blue-Red Yellow-Black	Completes a homing circuit to the All 4 Star Repaly Counter & Multiple Stepper Step-Up.
Cam 2 N.O. Sw. B (4)	ASW-C1X-2	J-53	54-9 60-8	White-Green Brown	Completes the Lite-Up Circuit for the new 3rd Ball "X" Feature.
Cam 3 N.O. Sw. 1	ASW-C1-21	A-19	18-9 93-11	Red-Black Gray-Yellow	Completes a pull-in circuit to the Mixer Cam #3 Relay Coil.
Cam 4 N.O. Sw. 1	ASW-C1-21	E-57	57-11 50-12	White-Orange White	Completes a circuit to the score step-ups (#16).
Cam 4 N.O. Sw. 2	ASW-C1-8	G-56	63-4 15-11	Brown-Yellow Red-White	Completes a circuit to selection fea. disc (spotting) & scores step-up.
Cam 4 N.O. Sw. 3	ASW-C1-8	D-35	91-3 58-15	Gray-Red White-Black	Completes a circuit to the P-3 Relay (Features & Scores Step).
Cam 5 N.C. Sw. 1	ASW-C2-18	F-57	15-11 57-11	Red-White White-Orange	Completes circuits to the Score Step-Ups. (#16).
MIXER LATCH COIL	BA-26-1040	A-6	85-1 70	Black-White Orange	Operated thru the Start Relay.
INDEX COIL ASSY.	LF-27-1250	E-67	98-1 70	Gray-Black Orange	Energized thru Control Unit Cam Sw. 4A.
Sw. 1 N.O.	ASW-A1-11	G-13	30 13-4	Yellow Red-Yellow	Completes Spotting Disc Circuits to flash Scores & Fea. Lites.
Sw. 2 N.O.	ASW-A1-54	G-8	30 81-6	Yellow Black-Red	Completes Spotting Disc circuits to flash Fea. Lites.
BLUE BUTTON (BB)STEP RE. COIL	G-33-2800 (Coil)	A-61	36-16 83-17	Yellow-Brown Black-Yellow	Energized via circuits on the Score Discs (8, 12-24) during Blue & Red Button Play for multiple score steps.
Sw. 1 N.O.	ASW-R1-3	A-61	36-16 83-17	Yellow-Brown Black-Yellow	Hold-in circuit to this relay & also adds extra score steps to the 1 & 2 Extra Step Relays when they are energized.
Sw. 2 N.O.	ASW-R1-3	E-56	53-15 13-13	White-Yellow Red-Yellow	Adds an extra scoring circuit to the Score Discs via the Mixer #3 Disc.

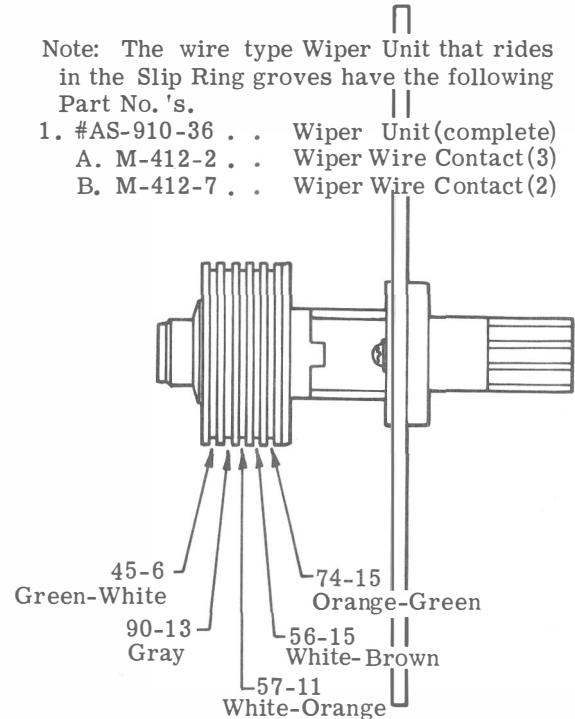
MIXER SPOTTING DISC WIPER UNIT

PART NO. AS-1034-84



Note: The wire type Wiper Unit that rides in the Slip Ring grooves have the following Part No.'s.

1. #AS-910-36 . . . Wiper Unit (complete)
- A. M-412-2 . . . Wiper Wire Contact (3)
- B. M-412-7 . . . Wiper Wire Contact (2)



FUNCTION CHART

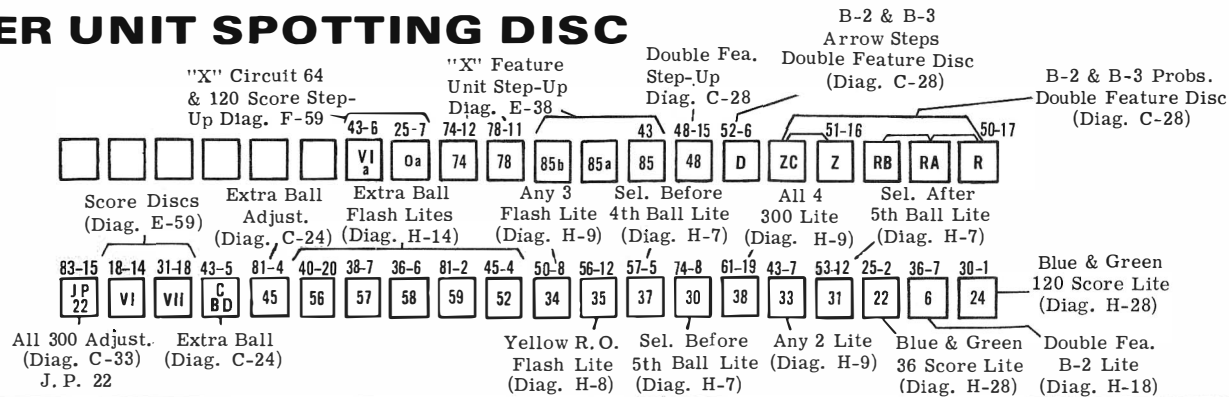
Note: The Function Chart starts with Arm "O", inside contact row to outside row, and other Arms follow in a clockwise pattern.

Contact Row No.	Wire No.	Wire Color	Location on Diagram	Function
1. Two Wipers are soldered together				Bridges Spotting Disc internal wiring.
3. Two Wipers are soldered together				Bridges Spotting Disc internal wiring.
5. (Orange)	57-11		C-7	Feed for Color Zone Score Step-Up Circuit.
7. (Green)	90-13	Gray	C-31	Feed for Selection Feature Step-Up Circuit.
9. (Gray)	45-6	Green-White	C-31	Feed for Mystic Lines Unit Step-Up Circuit.
2. (Red)	74-15	Orange-Green	H-12	Mystic Lines Step-Up Lite Circuit (A-B-C).
4. (White)	56-15	White-Brown	H-8	Selection Features Lite Circuit.
6. (Orange)	57-7	White-Orange	C-11	Feed for Color Zone Score Step-Up Circuit.
1. Two Wipers are soldered together				Bridges spotting disc internal wiring.
8. (Gray)	45-6	Green-White	C-31	Feed for Mystic Lines Step-Up Circuit.
2. (Red)	74-15	Orange-Green	H-12	Feed for Mystic Lines Step-Up Lite Circuit (A-B-C).
4. (White)	56-15	White-Brown	H-8	Selection Features Lite Circuit.

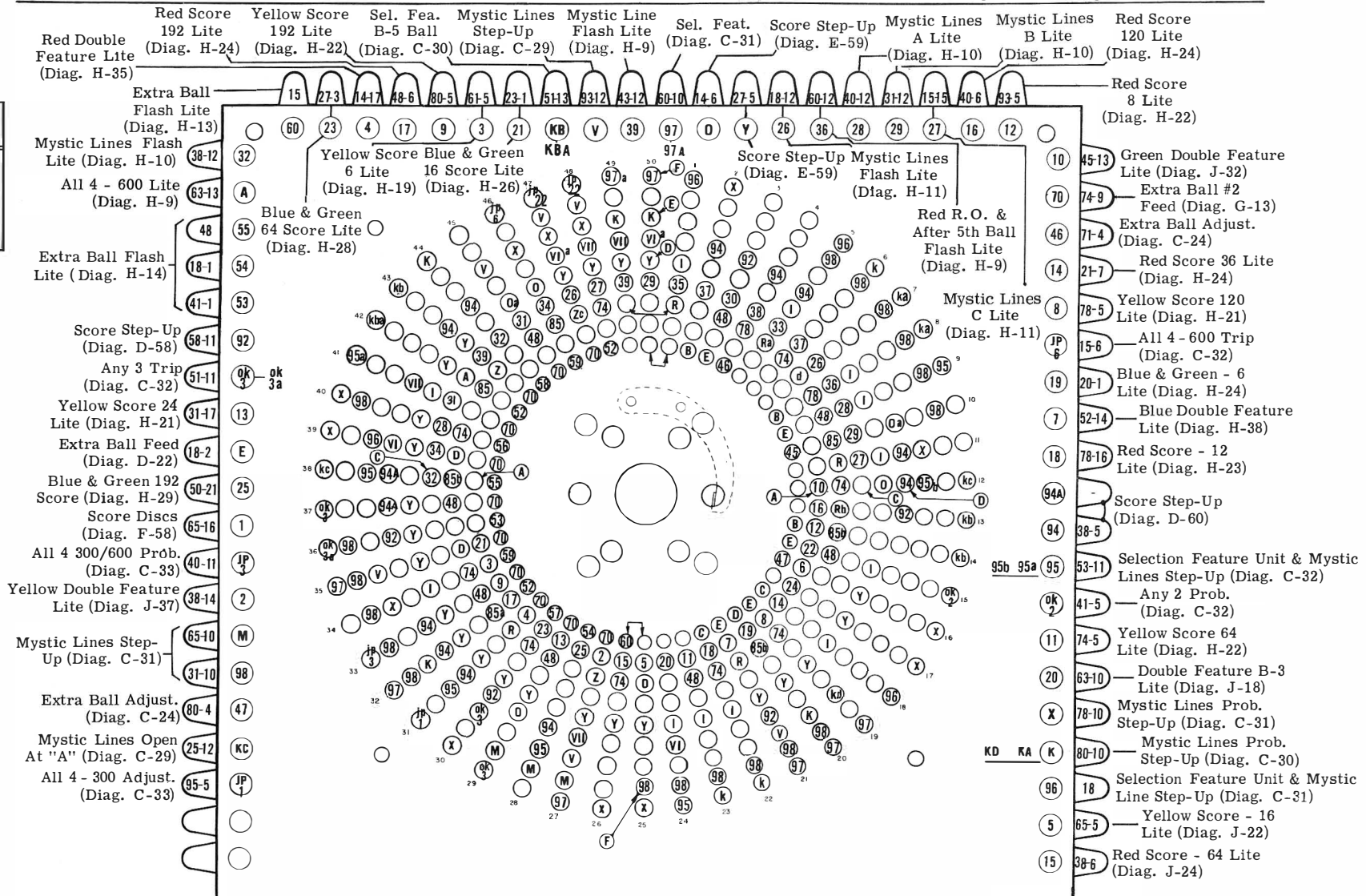
MIXER UNIT SPOTTING DISC

Disc. (Wired) . . W-840-37C
Wiper Assy. . . AS-1034-84

Wipers Feed Thru Slip Ring	Wire No.	Location on Wiring Diag.
A	74-15	H-12
B	48-15	C-28
C	56-15	H-8
D	57-11	E-59
E	90-13	C-31
F	45-6	C-31



Outside Wipers	Wire
9	45-6
8	90-13
7	63-4
6	
5	



STEPPING UNITS SW. & COIL CHART

Note: Following this Stepping Unit Switch & Coil Function Chart is the Stepping Unit's Contact Plate Disc Function Diagrams and Parts List. These Disc Layouts show the complete wiring order & cir-

cuit function.

The four color zone Replay Counter Discs (identical disc layouts) is shown on Page 19 with the Winners Score Determination Chart.

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
SELECTION FEATURE UNIT					
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-U2-6	D-31	51-21 90-15	White-Red Gray	Opens a features control Step-Up circuit thru spotting disc
2. N.C. Open at Top	ASW-U2-5	A-30	48-10 J	Green-Black Jumper	Opens circuit to Selection Feature Step-Up Coil
MYSTIC LINES FEATURE UNIT					
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-U2-5	A-29	81-7 J	Black-Red Jumper	Opens circuit to Mystic Lines Step-Up Coil
BLUE ZONE REPLAY COUNTER					
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-U1-9 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
GREEN ZONE REPLAY COUNTER					
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-U1-9 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
RED ZONE REPLAY COUNTER					
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-U1-9 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
YELLOW ZONE REPLAY COUNTER					
YELLOW RE-PLAY STEP-COIL	ASW-U1-9	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 Replay Counter Disc.
1. N.O. Step-Up Arm	ASW-U1-9 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
REPLAY REGISTER UNIT					
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 K1 & Multiplay Relay also Key Unit.
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-U3-6	F-4	56-2 48-2 27-9	White-Brown Green-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-U1-6	D-4	63-2 10-5	Brown-Yellow Red	Completes circuit to start relay when playing replays thru buttons.
RED LETTER UNIT					
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-U3-4	D-23	J 52-5 81-7	Jumper White-Blue Black-Red	Directs Circuit from Red Letter Step-Up to Mystic Lines Step-Up
EXTRA BALL UNIT					
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.).
MULTIPLIER UNIT					
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.
YELLOW SCORE UNIT					
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-U2-12	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-U1-9	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

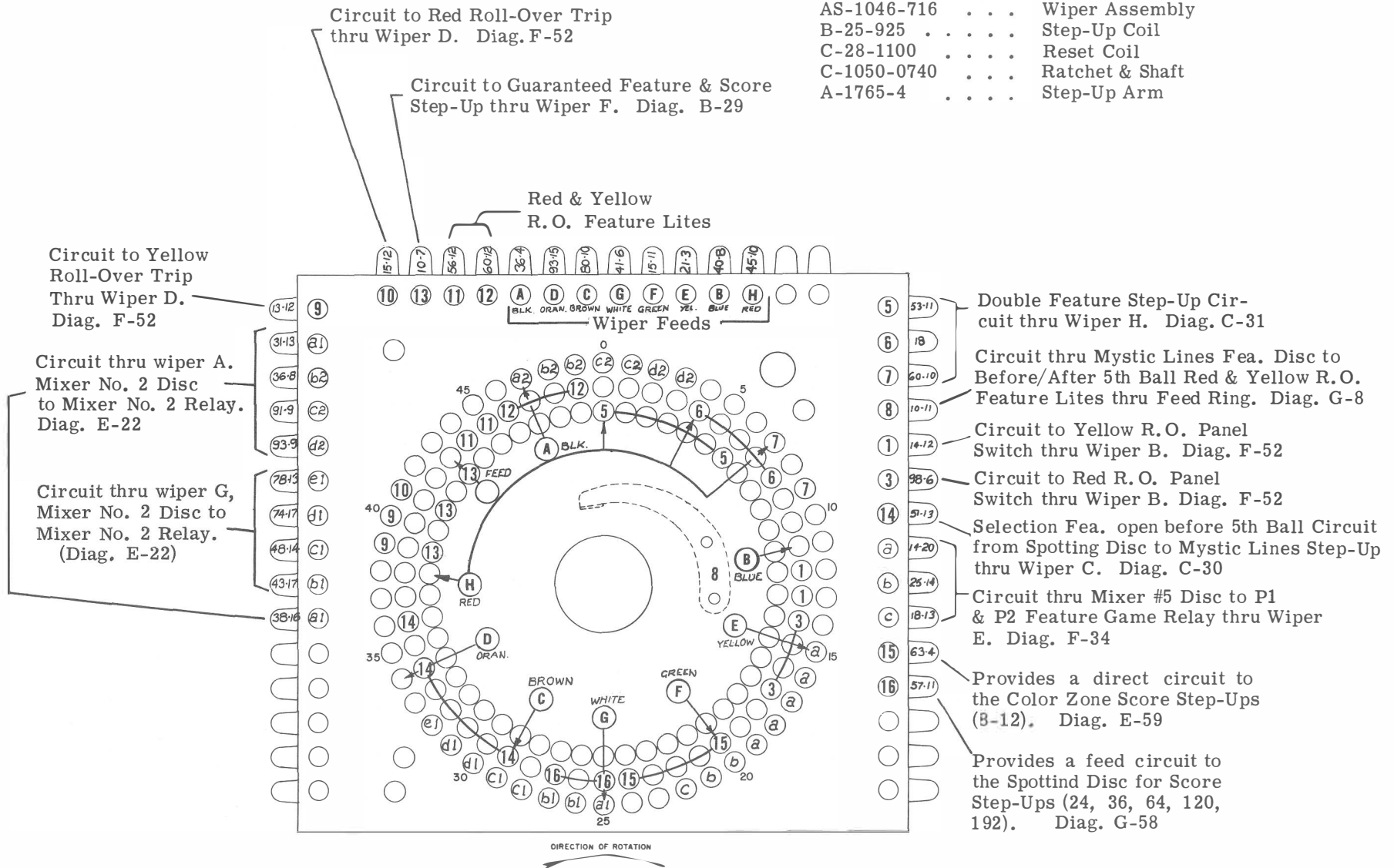
Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
YELLOW SCORE UNIT (cont'd)					
1. N.C. Operate at Top	ASW-U2-5	A-57	54-14 J	White-Green Jumper	Opens circuit to yellow Step-Up Coil
2. N.O. Open at Zero	ASW-U2-1	F-7	14-14 45-8	Red-Green Green-White	Completes an anti-cheat circuit to the Shutter Motor.
3. N.O. Open at Zero	ASW-U2	A-55	31-15 70	Yellow-Red Orange	Completes circuit to Features & Scores Play & Lock Relays (Red, Blue & Green Buttons).
RED SCORE UNIT					
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-U2-12	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-U1-9	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-U2-5	A-58	J 52-19	Jumper White-Blue	Opens circuit to Red Score Step-Up Coil.
BLUE & GREEN SCORE UNIT					
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-U2-12	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-U1-9	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-U2-5	A-60	J 14-15	Jumper Red-Green	Opens circuit to blue & Green Score Step-Up Coil.
2. N.C. Open at Zero	ASW-U1	D-12	57-6 85-7	White-Orange Black-White	Provides a hold-in circuit to Red Button Relay for starting a game.
DOUBLE FEATURE UNIT					
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-U3	B-16	56-11 95-13 71-9	White-Brown Gray-White Orange-Red	Directs circuit to Selector Button Play when Feature is lit.
2. N.C. Open at Top	ASW-U2-5	A-27	54-2 J	White-Green Jumper	Opens Circuit to the Double Feature Step-Up Coil.
TIMER UNIT					
TIMER UNIT STEP-UP COIL	B-25-925	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.

STEPPING UNITS SW. & COIL CHART

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
Timer Unit (Cont'd)					
1. N.C. Open at Top (Top Unit)	ASW-U2-5	B-9	27-2 J	Blue-Orange Jumper	Opens circuit to Timer Unit Step-Up Coil
2. N.C. Open at Top	ASW-U2-6	G-1	20P 30P	Blue Yellow	Opens circuit to Control Unit Motor & Mixer Unit Motor
3. N.O. Open at Zero	ASW-U2-2	F-53	90-9 30	Gray Yellow	Completes a circuit to the Lifter Start Relay
4. N.O.	ASW-U2-1	B-13	91-1 38-3	Gray-Red Yellow-Black	Completes a circuit to Ball Lifter Motor
5. N.O. Open at Zero	ASW-U2	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.
"X" FEA. UNIT					
"X" FEA. UNIT STEP-UP COIL	B-25-925	A-38	70 85 <u>J</u>	Orange Black-Wh. <u>J</u>	Energized thru the Spotting Disc during initial game step-ups.
RESET COIL	C-28-1100	D-67	70 78-3	Orange Orange-Black	Energized thru Shutter Motor Cam Sw. #6B.
1. N.C. Open at Top	ASW-U2-5	A-38	85-9 85 <u>J</u>	Black-White Black-White <u>J</u>	Opens circuit to this Unit's Step-Up Coil.
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.

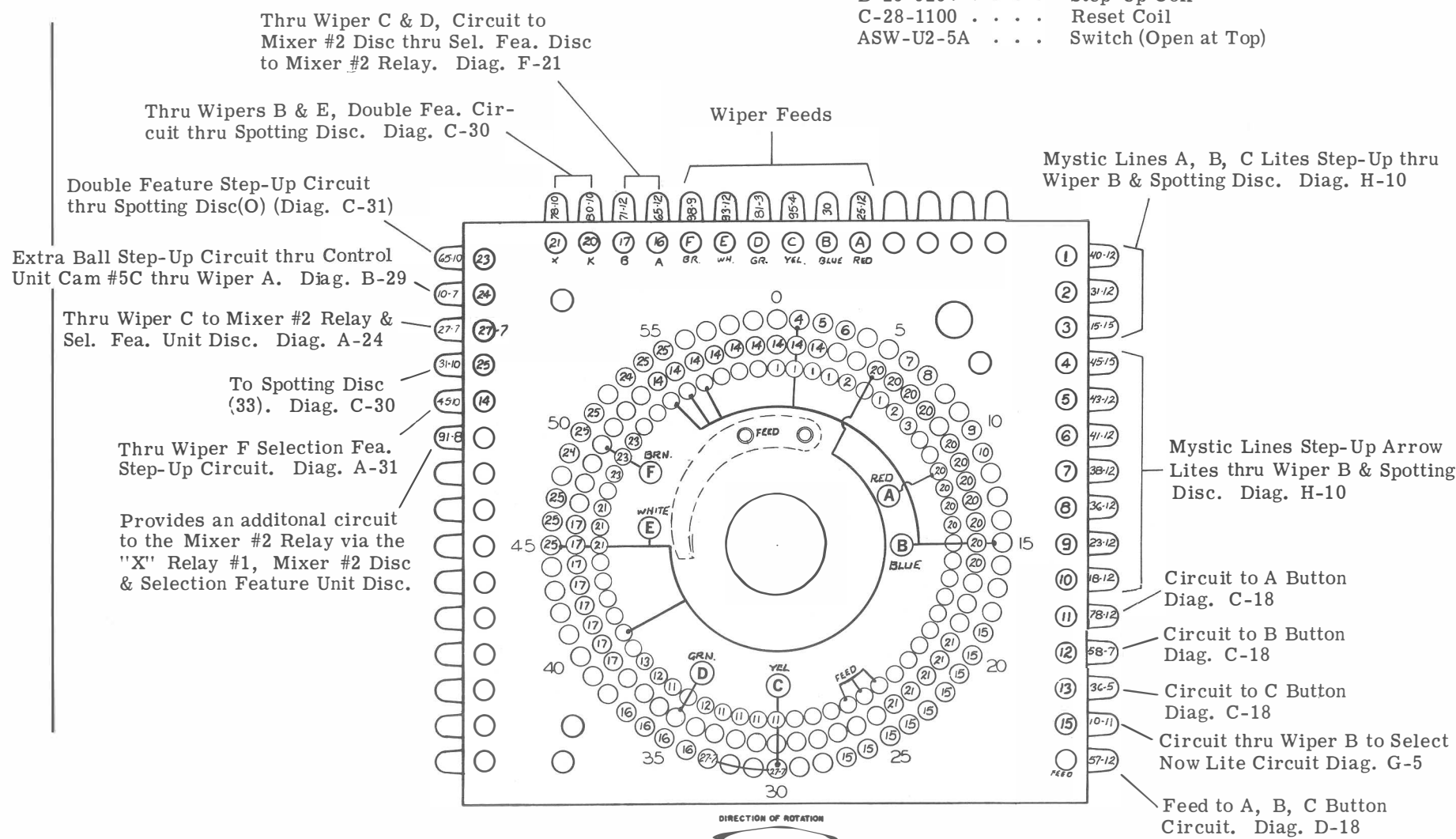
7-Step-Unit Wipers shown in a Reset Position

Part No.	Description
AS-827-519	Complete Stepping Unit
W-764-16B	Contact Plate Disc (Wired)
AS-1046-716	Wiper Assembly
B-25-925	Step-Up Coil
C-28-1100	Reset Coil
C-1050-0740	Ratchet & Shaft
A-1765-4	Step-Up Arm



SELECTION FEA. DISC

Part No.	Description
AS-827-521	Complete Stepping Unit
W-1056-4B	Contact Plate Disc (Wired)
AS-1046-471B	Wiper Assembly
C-1060-1249	Ratchet & Shaft
B-25-925	Step-Up Coil
C-28-1100	Reset Coil
ASW-U2-5A	Switch (Open at Top)

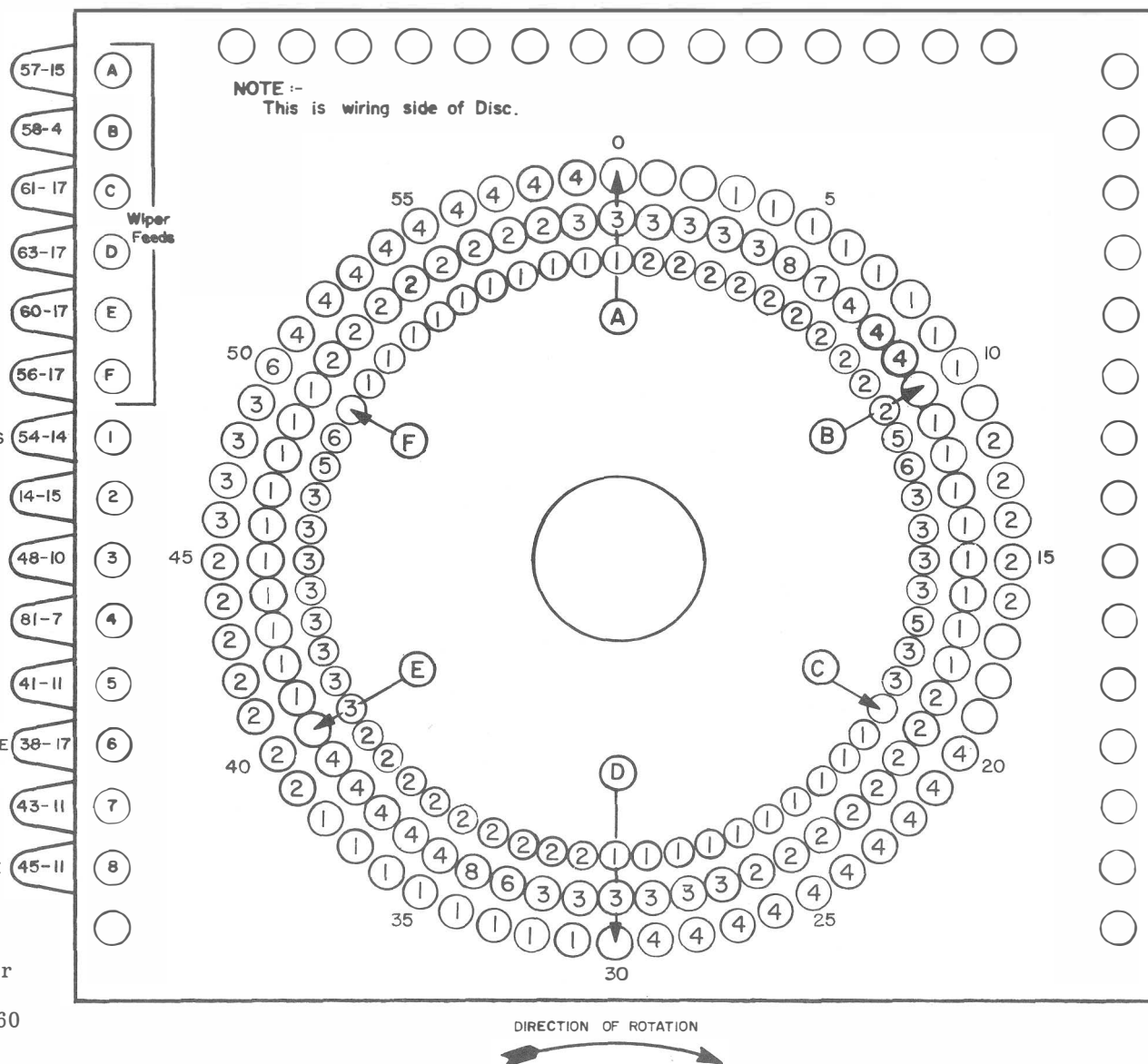


12 Step Unit. Wipers Shown in Reset Position

Part No.	Description
AS-1022-140	Red Letter Unit (complete)
W-933-4B	Contact Plate Disc (Wired)
AS-1046-443A	Wiper Assembly
C-1060-2907	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



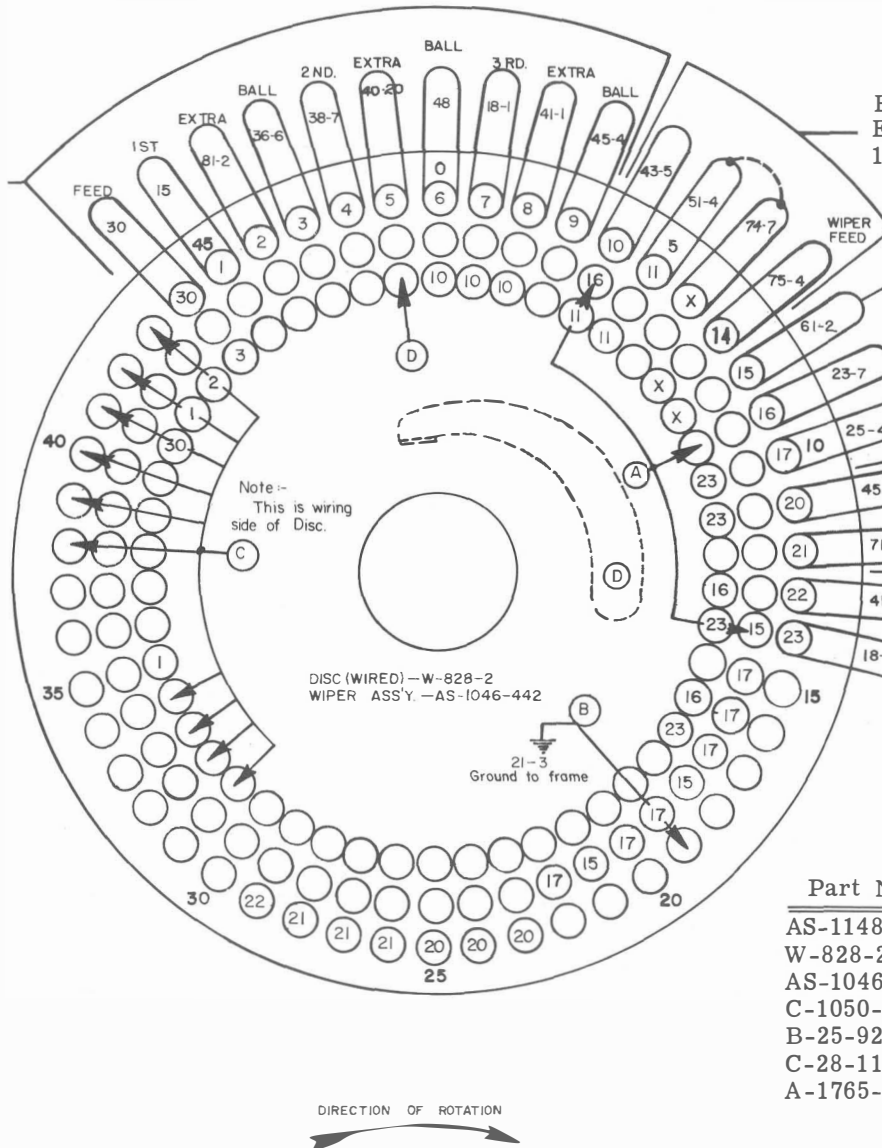
RED LETTER UNIT DISC

29 Step Unit. Wipers Shown in Reset Position

EXTRA BALL UNIT DISC

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 WipersA, 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

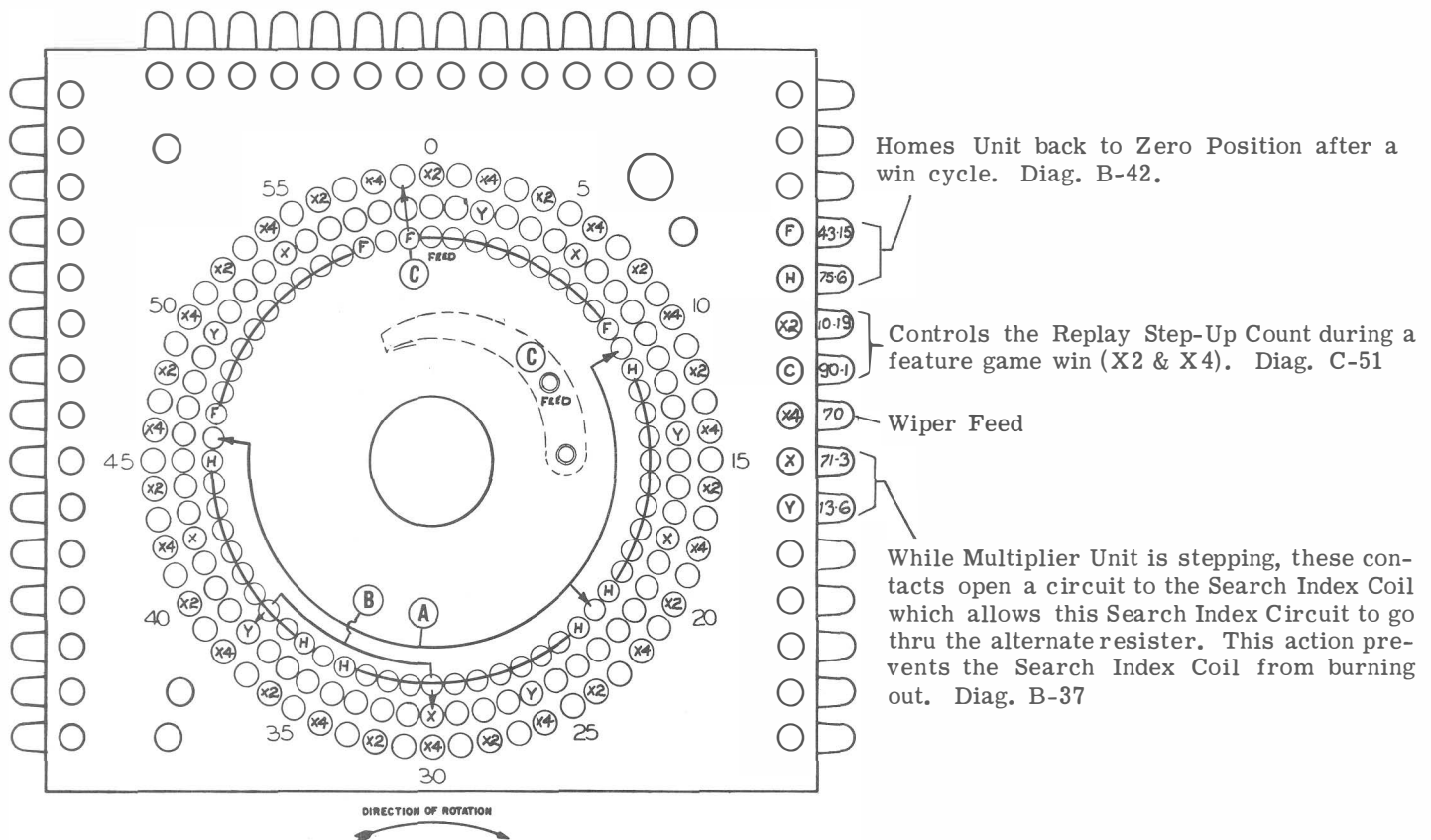
Ball Lifter Motor & Ball Detect Relay Circuit for Extra Balls thru Wiper B. (Check Trough Sw.'s). Diag. G-13

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-1046-442	Wiper Assembly
C-1050-10	Ratchet & Shaft
B-25-925	Step-Up Coil
C-28-1100	Reset Coil
A-1765-4	Step-Up Arm

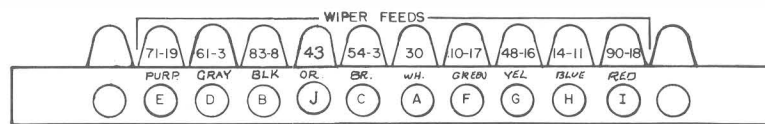
MULTIPLIER UNIT DISC



Continuous Step Unit

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

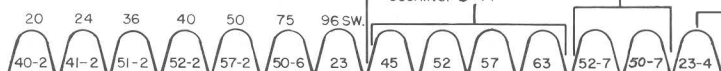
YELLOW SCORE UNIT DISC VIEWED FROM WIRING SIDE



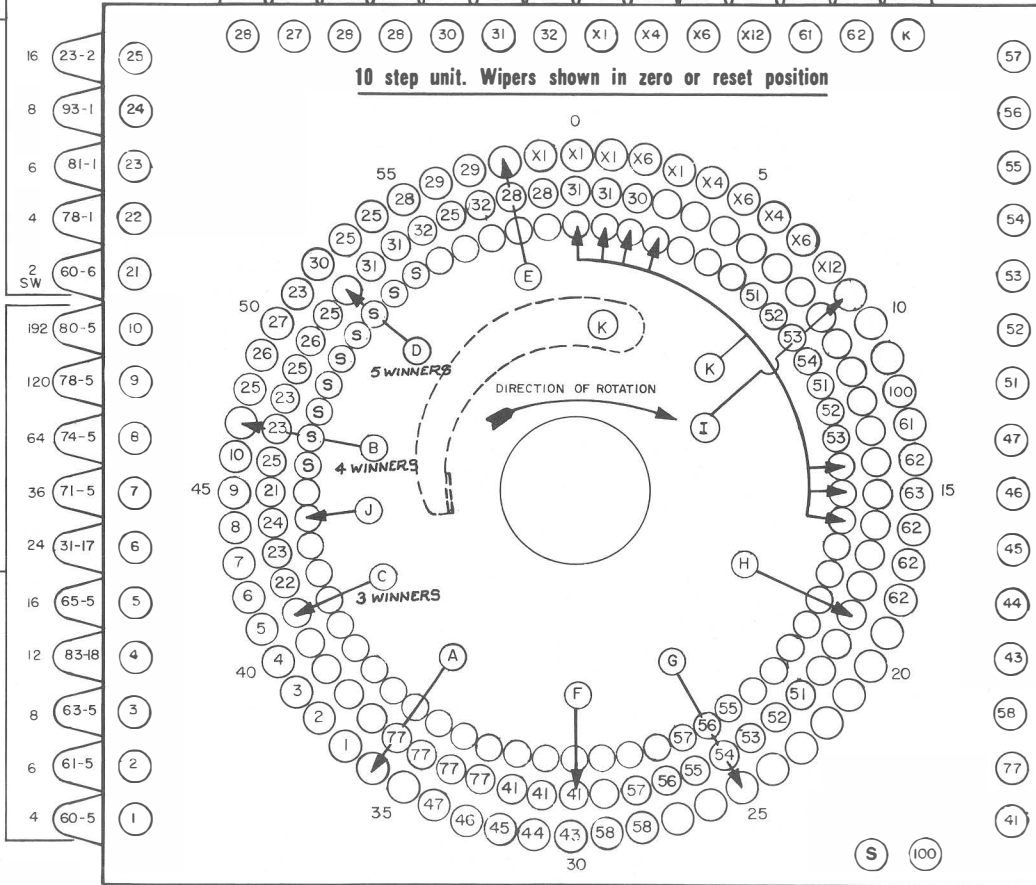
Yellow Score Step-Up Circuit thru Mixer #5 Disc to 1-2 Extra Step Relay. Wiper I at Diag. Location B-62.

THRU WIPER (E) MULTIPLIER SW'S FOR YELLOW WINNER SCORING. B-44

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



10 step unit. Wipers shown in zero or reset position



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

Provides an additional circuit to the "X" Feature Step-Up Coil after the first coin has been played. Diag. E-38

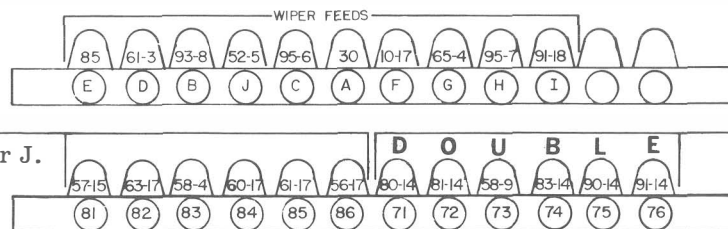
Part No. Description

AS-1022-138	Yellow Score Unit (Complete)
W-848-14B	Contact Plate Disc (Wired)
AS-1046-717	Wiper Assembly
C-1060-1048	Ratchet & Shaft
B-25-925	Step-Up Coil
C-28-1100	Reset Coil
A-1765-14A	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

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

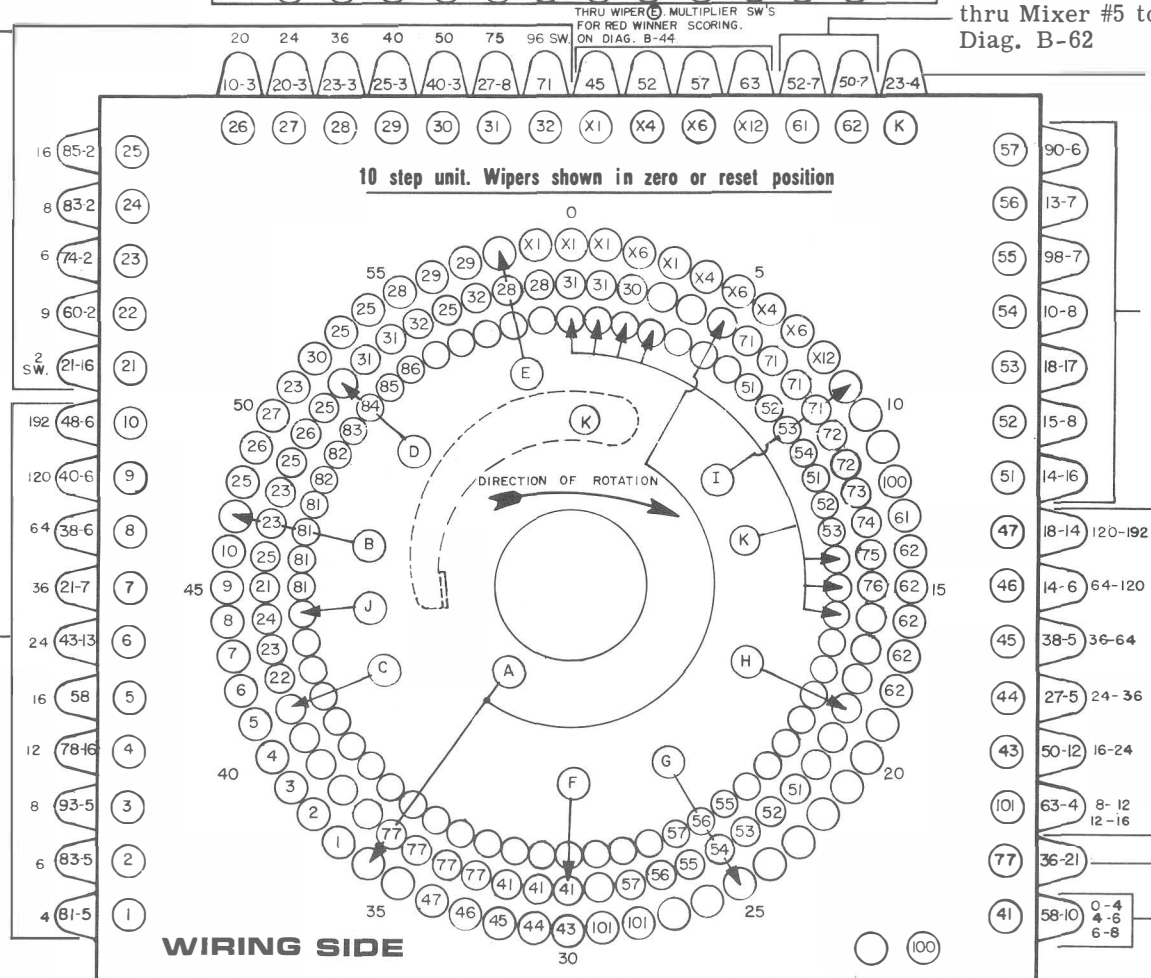


Red Letter Lites
Wiper A, Diag. H-32

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.

Part No.	Description
AS-1022-104	Red Score Unit
W-845-9B	Contact Plate (wired)
AS-1046-475	Wiper Assembly
C-1060-1047	Ratchet & Shaft
C-28-1100	Reset Coil
B-25-925	Step-Up Coil
A-1765-14	Step-Up Arm

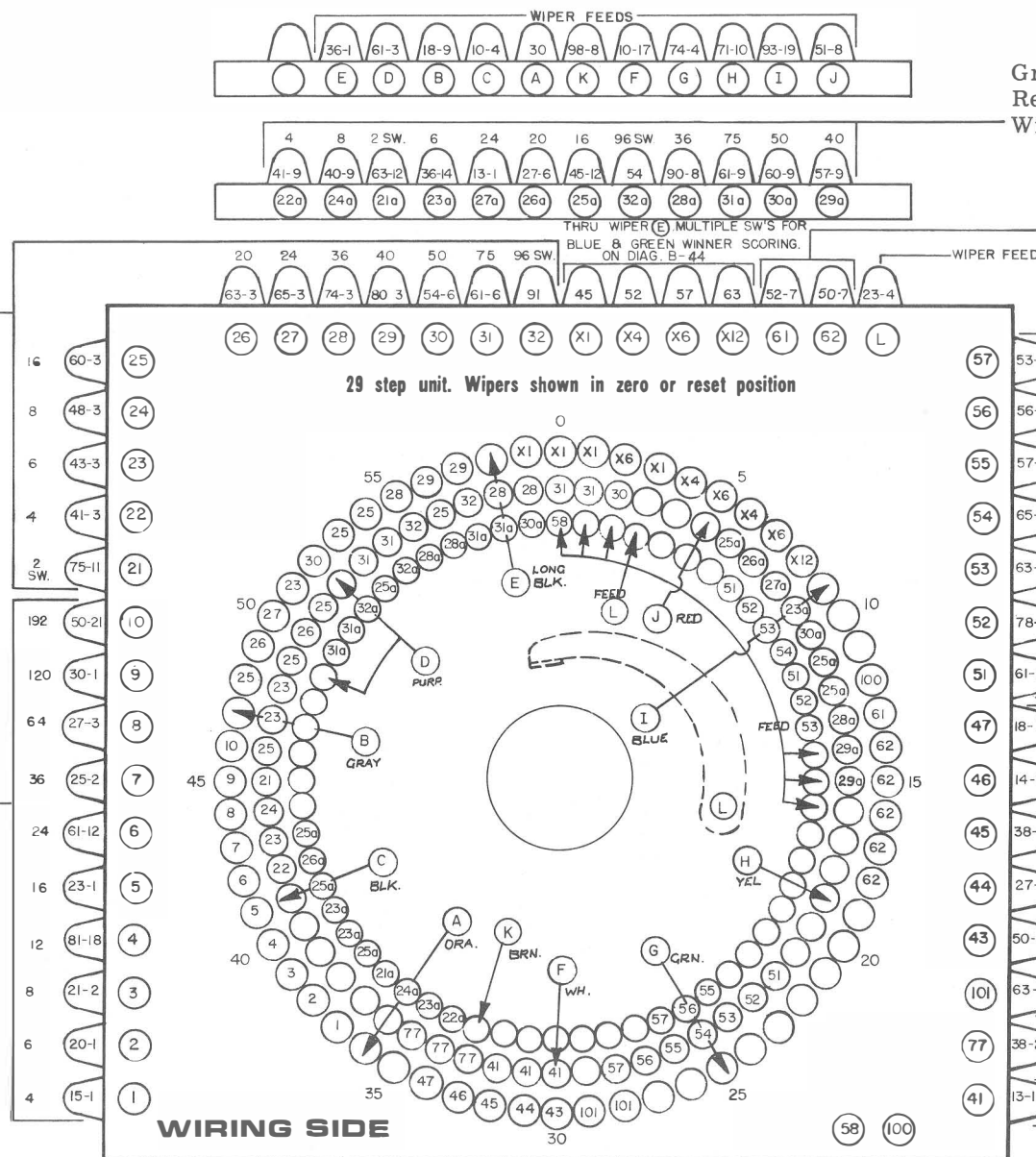
Red Score Step-Up Circuit to 1-2
Extra Step Relay thru Mixer #5
Disc. Check Wiper I at Diag. B-61.

RED SCORE UNIT DISC

BLUE & GREEN SCORE UNIT DISC

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

Blue & Green Score Lite Circuit,
Check Wiper A, Diag. H-25



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 & 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.

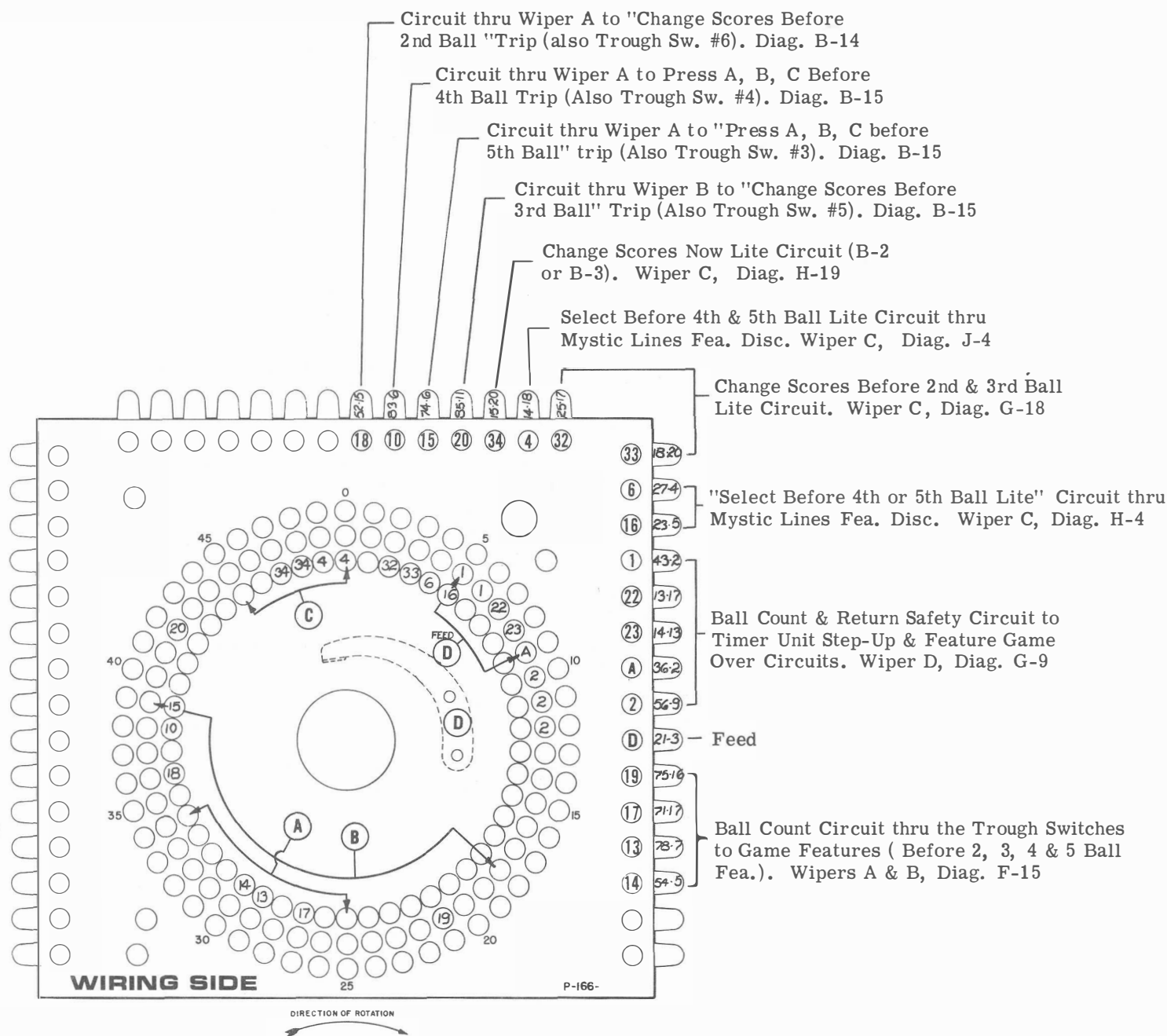
Part No.	Description
AS-1022-105 . . .	Blue-Green Score Unit (Complete)
W-1055-2B . . .	Contact Plate Disc (Wired)
AS-1046-580 . . .	Wiper Assembly
C-1060-1047 . . .	Ratchet & Shaft
C-28-110	Reset Coil
B-25-925	Step-Up Coil
A-1765-14	Step-Up Arm

(BACK DOOR LOCATION)



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

TIMER UNIT DISC



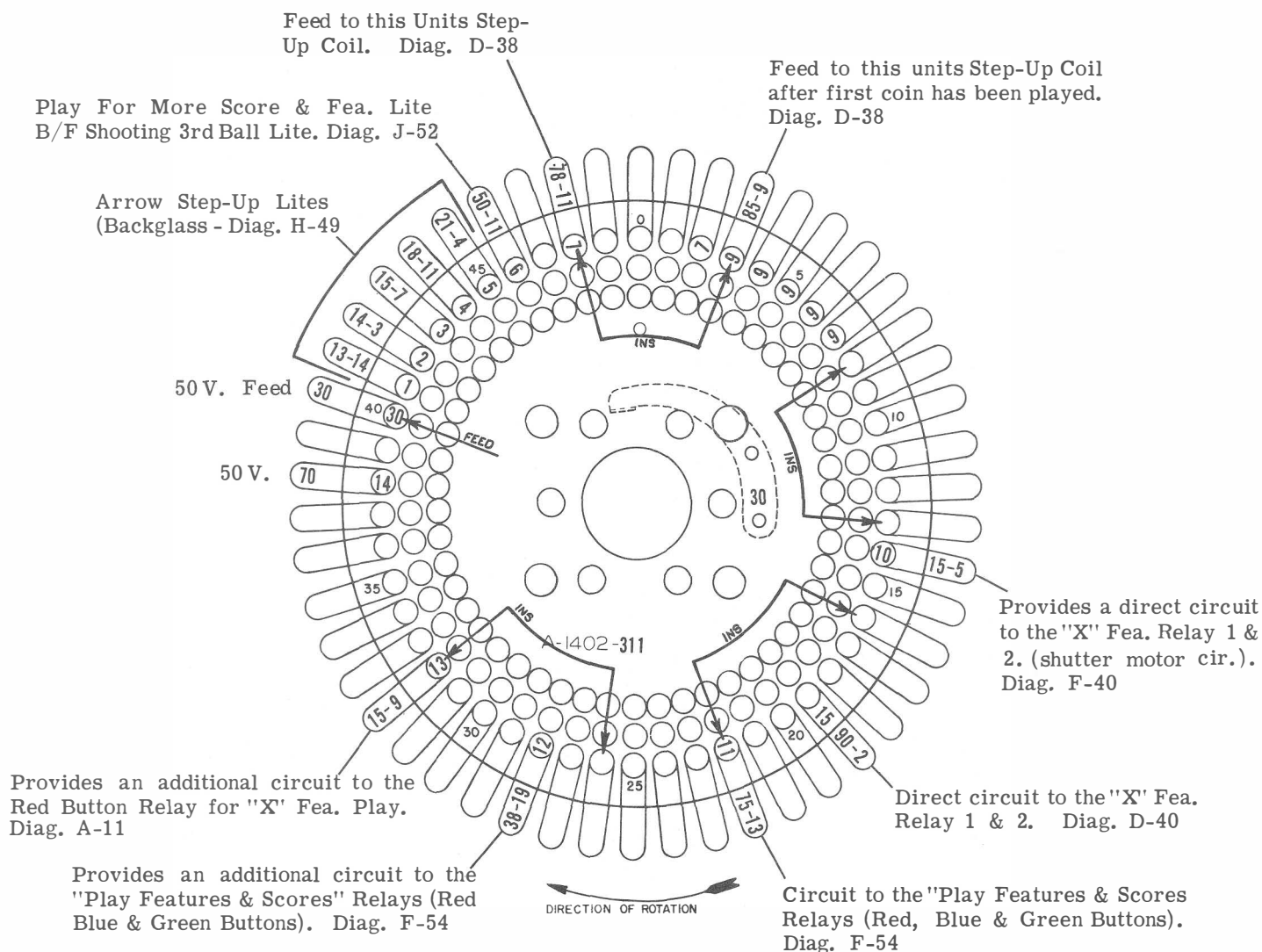
8 Step Unit. Wipers Shown in a Reset Position

Part No.	Description
AS-1110-48	Timer Unit (Complete)
W-844-7B	Contact Plate (Wired)
AS-1046-673A	Wiper Assembly
C-1050-0843	Ratchet & Shaft
C-28-1100	Reset Coil
B-25-925	Step-Up Coil
A-1765-4	Step-Up Arm

X FEATURE UNIT DISC

(NEW - PLAY FOR MORE SCORES & FEA.)

Play for more Scores & Features before shooting 3rd Ball Unit. 6 Step Unit. Wipers shown in a Reset position.



Part No.	Description
AS-1022-139	"X" Feature Stepping Unit
W-828-3B	Contact Plate (Wired)
AS-1046-715	Wiper Assembly
C-1050-0637	Ratchet & Shaft
C-28-1100	Reset Coil
B-25-925	Step-Up Coil
A-1765-4	Step-Up Arm Assembly

BACK CAB. RELAY BANK - 4

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

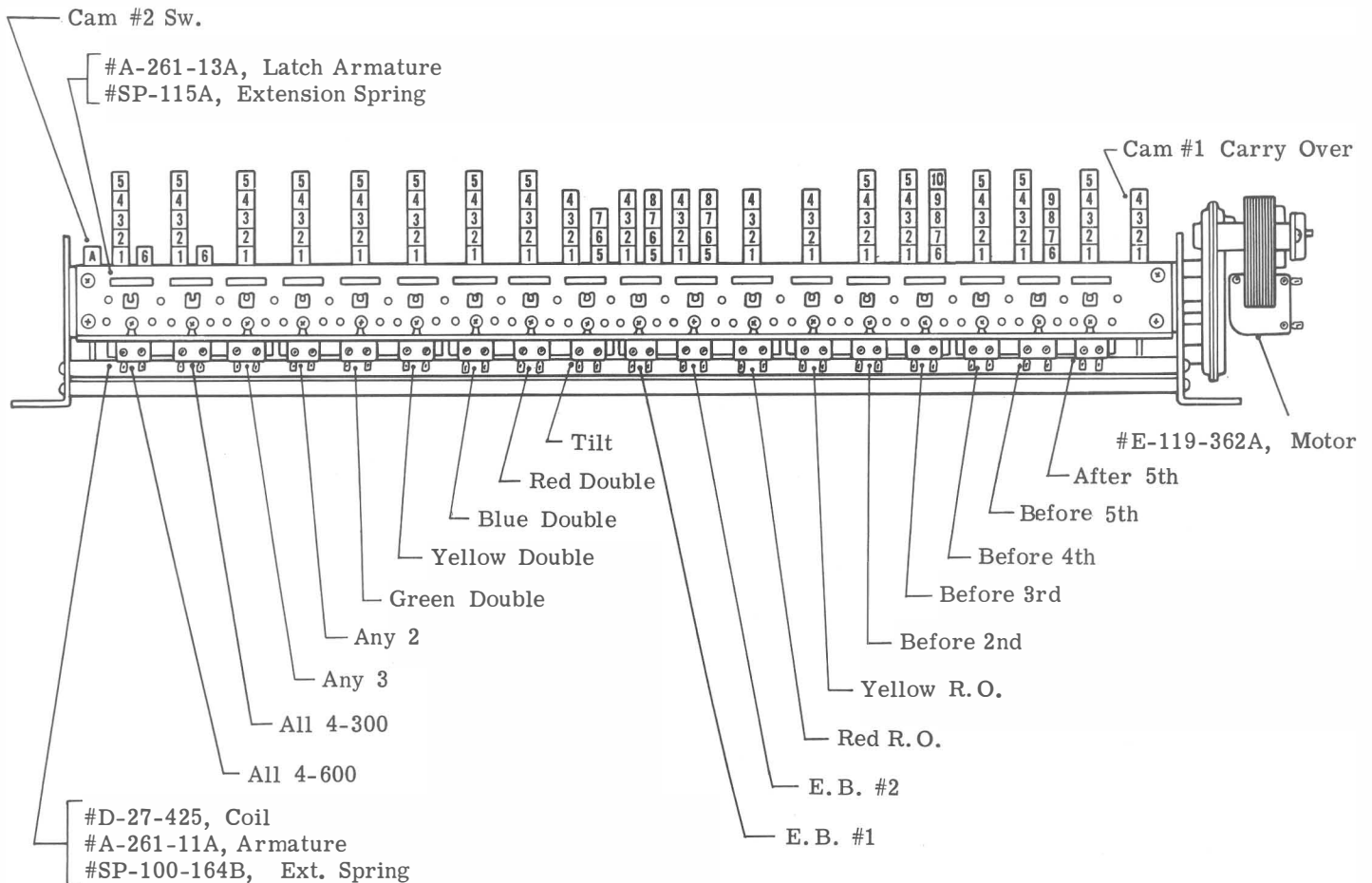
Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
REPLAY- RESET RELAY COIL	G-31-1800	A-4	75-2 70	Orange-White Orange	Energized by an Anti-Cheat Relay Circuit thru Replay Reg. Unit Zero Sw.
1 R. N.O.	ASW-R1-3	F-3	56-2 75-2	White-Brown Orange-White	Completes lock-in circuit to this Relay & Mult. Reset circuit to Replay Reg.
2 R. N.O.	ASW-R1-3	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-R2-4	D-4	10-5 61-8	Red Brown-Red	Opens Start Relay Circuit.
1 L. T.	ASW-R3-4	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-R1-8	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-R1-3	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.O.	ASW-R1-3	F-35	21-3 91-3	Blue-Red Gray-Red	Completes a circuit to the Feature Game "P-3" Relay Coil.
4 R. N.C.	ASW-R2-4	B-19	14-9 21-3	Red-Green Blue-White	Opens a circuit to the Mixer Cam #3 Relay Coil.
1 L. N.C.	ASW-R2-4	A-24	75-4 78	Orange-White Orange-Black	Opens a circuit to the Extra Ball Unit Step-Up Coil.
2 L. N.C.	ASW-R2-4	D-30	18-16 95-9	Red-Black Gray-White	Opens the complete Features Step-Up Circuit (via Spotting Disc).
3 L. N.C.	ASW-R2-4	D-52	56-4 38-15	White-Brown Yellow-Black	Opens an "Any 2 Stars" Red Letter Win - Relay #1 & #2 Circuit.
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-R1-8	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-R1-3	E-6	10-5 27-9	Red Blue-Orange	Completes a circuit to Start Relay from Coin Sw.
3 L. N.C.	ASW-R2-4	B-3	45-9 98-5	Green-White Grey-Black	Opens the Replay Reg. Reset Circuit
4 L. T.	ASW-R3-4	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-R1-8	B-26	30 78-4	Yellow Orange-Black	Completes circuit to this Relay Coil.
2 R. N.O.	ASW-R1-3	H-40	51-7 80-1	White-Red Black	Complets 6 V. Circuit to Game Hole/Scoreboard Lites.
3 R. N.C.	ASW-R2-4	F-7	14-14 30	Red-Green Yellow	Closes Playfield Shutter when turning game on.
4 R. N.C.	ASW-R2-4	E-12	57-6 85-7	White-Orange Black-White	Opens a circuit to the Red Button Relay.
1 L. T.	ASW-R3-4	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-R3-4	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

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

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-C1-6	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 at 75	ASW-C1-24	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-C1-7	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 Color Zone Winners Score Step-Up Circuit. Sets up game for a 4X Fea. Win if X4 Win Relay is energized. Check Control Unit Cam Sw.'s 10A, 11A, 12A & 13A.
1. N.O.	ASW-R1X-3	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 Relay Coil	G-33-2800	B-51	13-15 90-1	Red-Yellow Grey	Energized thru the Color Zone Winners Score Step-Up Circuit. Sets up game for a 2X Fea. Win if X2 Win Relay is energized. Ck. Control Unit Cam Sw.'s 10A, 11A, 12A & 13A.
1. N.O.	ASW-R1X-3	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 initial color zone score Step-up play via the Score Discs & Mixer Unit Discs #3 & 5. Gives multiple score advances.
1. N.O.	ASW-R1-8	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-R1-3	F-56	81-11 25-16	Black-Red Blue-White	Allows 2 extra steps on Scores Step-Up.
1st EXTRA Step Relay Coil.	ASW-R1-8	A-62	71-13 31-5	Orange-Red Yellow-Red	Energized thru initial color zone score step-up play via the Score Discs & Mixer Unit discs #3 & #5. Gives an additional score advance.
1. N.O.	ASW-R1-8	A-62	36-16 31-5	Yellow-Brown Yellow-Red	Completes a hold-in circuit to this Relay Coil.
2. N.O.	ASW-R1-3	E-56	81-11 60-18	Black-Red Brown	Allows 1 Extra Step on Scores Step-Up

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-2	B-33	15-6 J	Red-White	Opens circuit to All 4-600 Coil
2. T.	ASW-B-3	H-9	71-15 30 63-13	Orange-Red Yellow Brown- Yellow	Directs Circuit to All 4 Star 300 or 600 Lite
3. T.	ASW-B-3	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-1	C-33	80-9 40-11	Black Green	Completes a circuit to the All 4-300 Trip
5. N.O.	ASW-B-1	A-33	52-11 70	White-Blue Orange	Completes a circuit to the All 4-300 Trip
6. T.	ASW-B-3	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-2	B-33	40-11 J	Green J	Opens Circuit to All 4-300 Coil
2. N.C.	ASW-B-2	D-26	18-2 36-19	Red-Black Yellow-Brown	Opens circuit to Extra Ball Step Up
3. N.C.	ASW-B-2	D-33	80-9 30	Black Yellow	Opens All 4-600 Circuit to All 4-300 Coil
4. N.O.	ASW-B-1	G-9	61-19 71-15	Brown-Red Orange-Red	Completes Circuit to All 4 Star 300 Lite
5. N.O.	ASW-B-1	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-2	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-2	A-32	51-11 J	White-Red J	Opens Circuit to Any 3 Stars Coil
2. N.C.	ASW-B-2	D-59	85-10 91-17	Black-White Grey-Red	Opens circuit to Red Score Step-Up
3. N.C.	ASW-B-2	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-1	G-8	50-8 58-3	White White-Black	Completes circuit to Any 3 Stars Lite
5. N.O.	ASW-B-1	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-2	A-32	61-10 J	Brown-Red J	Opens circuit to Any 2 Stars Coil
2. N.C.	ASW-B-2	D-58	83-4 85-10	Black-Yellow Black-White	Opens Red Score Step-Up Circuit (thru Mixer #3 Disc)
3. T.	ASW-B-3	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-3	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-1	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	38-9 J	Yellow-Black J	Energized thru the Mixer Unit Discs during Red/Blue (Score Step-Up) Button Play & Red Letter Winner Circuit
1. N.C.	ASW-B-2	A-56	45-11 J	Green-White J	Opens circuit to Green Double Coil
2. N.C.	ASW-B-2	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-1	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-3	G-37	50-13 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-3	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	38-9 J	Yellow-Black J	Energized thru Mixer Unit Discs during Red/Blue (Score Step-Up) Button Play & Red Letter Winner Circuit
1. N. C.	ASW-B-2	A-56	38-17 J	Yellow-Black J	Opens circuit to Yellow Double Coil
2. N. C.	ASW-B-2	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-1	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-3	G-36	60-16 30 41-19	Brown Yellow Green-Red	Directs circuit to Yellow Double Feature Game Lites
5. T.	ASW-B-3	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	38-9 J	Yellow-Black J	Energized thru Mixer Unit Discs d during Red/Blue (Score Step-Up) Button play & Red Letter Winner Circuit
1. N. C.	ASW-B-2	A-56	43-11 J	Green-Yellow J	Opens circuit to Blue Double Coil
2. N. C.	ASW-B-2	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-1	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-3	G-38	80-13 30 45-7	Black Yellow Green-White	Directs circuit to Blue Double Feature Game Lites
5. T.	ASW-B-3	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	38-9 J	Yellow-Black J	Energized thru Mixer Unit Discs during Red/Blue (Score Step-Up) Button Play & Red Letter Winner Circuit
1. N. C.	ASW-B-2	A-56	41-11 J	Green-Red J	Opens circuit to Red Double Coil
2. N. C.	ASW-B-2	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-1	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-3	G-35	51-19 30 40-17	White-Red Yellow Green	Directs circuit to Red Double Feature Game Lites
5. T.	ASW-B-3	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-2	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-2	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-3	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-3	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-2	F-1	60P 30P	Brown Yellow	Cuts power to Mixer & Control Units
6. N. O.	ASW-B-1	D-12	57-6 85-7	White-Orange Black-White	Completes a circuit to the Red Button Relay
7. N. O.	ASW-B-1	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-2	C-26	91-6 85-4	Grey-Red Black-White	Opens Control Unit Cam Sw. #5B to Anti-Cheat Relay
2. T.	ASW-B-3	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-3	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-1	C-10	83-1 71-8	Black-Yellow Orange-Red	Completes a circuit to the Timer Unit Reset Coil
5. N. C.	ASW-B-2	A-13	58-12 J	White-Black J	Opens a circuit to the Extra Ball #1 Trip Coil
6. N. C.	ASW-B-2	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-1	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-1	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-2	A-12	10-6 J	Red J	Opens circuit to this Coil
2. N. C.	ASW-B-2	C-11	20-2 85-7	Blue Black-White	Opens a circuit to the Red Button Relay (Start Game)
3. T.	ASW-B-3	B-7	60-11 61 98-2	Brown 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-1	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-2	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-2	D-29	83-9 14-8	Black-Yellow White-Green	Opens a circuit which locks out all other features while Yellow Button is being operated
7. T.	ASW-B-3	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-1	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-2	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-3	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-3	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-1	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-2	A-52	38-13 J	Yellow-Black J	Opens circuit to Yellow R. O. Coil
2. T.	ASW-B-3	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-3	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-1	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-2	A-14	52-15 J	White-Blue J	Opens circuit to this Coil
2. N. C.	ASW-B-2	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-2	E-17	57-17 81-16	White-Orange Black-Red	Opens circuit after shooting 2nd ball.
4. N. O.	ASW-B-1	E-9	13-17 43-2	Red- Yellow Green- Yellow	Completes circuit to timer unit Step-Up Coil after shooting 2nd ball.
5. N. O.	ASW-B-1	H-53	31-20 60-8	Yellow-Red Brown	Completes an "X" Feature Lite Circuit.
CHANGE SCORES BEFORE 3rd BALL COIL	D-27-425	A-14	70 85 J	Orange Black-White 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-2	A-14	85-11 85 J	Black-White Black-White J	Opens Circuit to this Coil.
2. N. C.	ASW-B-2	G-19	18-20 63-10	Red-Black Brown- Yellow	Opens Selector Button Circuit to the Change Score Lites Feature after shooting 3rd ball.
3. N. C.	ASW-B-2	E-17	48-18 81-16	Green-Black Black-Red	Opens circuit after shooting 3rd Ball.
4. N. C.	ASW-B-2	A-11	15-9 91-15	Red-White Gray-Red	Opens the "X" Feature Circuit after 3rd ball is shot. Cuts Button play.
5. N. C.	ASW-B-2	H-31	36-15 93-4	Yellow-Brown Gray- Yellow	Opens circuit to Blue Green & Red Button Instr. Lites after 3rd ball is shot.
6. N. C.	ASW-B-2	G-54	21-3 38-19	Blue-Red Yellow-Black	Opens Red, Blue & Yellow Button Circuit after 3rd Ball is shot ("X" Fea. when lit)
7. N. C.	ASW-B-2	H-53	83-7 31-20	Black- Yellow Yellow-Red	Opens circuit to "X" Fea. Instr. Lites after 3rd Ball is shot.
8. N. C.	ASW-B-2	H-53	83-7 50-11	Black- Yellow White	Same as above (#7).
9. N. O.	ASW-B-1	E-9	14-13 43-2	Red-Green Green- Yellow	Completes a Timer Disc circuit to Timer Step-Up Coil.
10. T.	ASW-B-3	B-7	45-18 80-18 53-5	Green-White Black White- Yellow	Opens a circuit to the Timer Cam Index Coil & Mixer Latch Coil.

TRIP RELAY BANK

Switch/Coil	Part No.	Location On Diagram	Wire No.	Wire Color	Function
PRESS BUTTONS BEFORE 4th BALL COIL (Mystic Lines)	D-27-425	A-15	70 83 J	Orange Black-Yellow	Energized thru Shutter Motor Cam #1D, Selection Feature Disc, Shutter Cam 5X, Lifter Start Re. Lifter Cam #1 Trough Sw.'s (4Balls), & Timer Disc.
1. N.C.	ASW-B-2	A-15	83-6 J	Black-Yellow	Opens Circuit to this Coil.
2. N.C.	ASW-B-2	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-3	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.O.	ASW-B-1	E-9	36-2 43-2	Yellow-Brown Green-Yellow	Completes circuit to Timer Unit Step-Up after shooting 4th Ball.
5. N.O.	ASW-B-1	F-41	15-5 40-5	Red-White Green	Completes search & scoring circuit for all Reg. Zone & Star Winners.
PRESS BUTTONS BEFORE 5th BALL COIL	D-27-425	A-15	70 J	Orange Jumper	Completes Search & Scoring Circuit for all Reg. Zone & Star Winners.
1. N.C.	ASW-B-2	H-7	52-12 56-12	White-Blue White-Brown	Opens circuit to panel Yellow Roll-Over Lite.
2. N.C.	ASW-B-2	B-52	13-12 38-13	Red-Yellow Yellow-Black	Opens circuit to Yellow Roll-Over Coil thru Sel. Feature Disc.
3. N.C.	ASW-B-2	D-18	98-3 21-12	Gray-Black Blue-Red	Opens circuit to Mystic Lines A, B, & C Buttons.
4. N.O.	ASW-B-1	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-1	D-9	78-6 27-2	Orange-Black Blue-Orange	Completes circuit to Timer Unit Step-Up Coil after 5th Ball has been shot.
6. N.C.	ASW-B-2	A-15	74-6 J	Orange-Green Jumper	Open circuit to Before 5th Ball Coil.
7. T.	ASW-B-3	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-1	B-12	10-6 25-8	Red Blue-White	Completes circuit to Extra Ball Trip #2 thru Yellow Button Play.
9. N.O.	ASW-B-1	E-4	80-11 18-6	Black Red-Black	Completes Extra Ball Circuit to the Start Relay Coil (Yellow Button Play).
PRESS BUTTONS AFTER 5th BALL COIL	D-27-425	A-15	70 J	Orange Jumper	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-2	A-15	98-11 J	Gray-Black Jumper	Opens circuit to After 5th Ball Coil
2. N.C.	ASW-B-2	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-2	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-2	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-2	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-20	B-10	30 90-20	Yellow Gray	Completes a circuit to the Trip Bank Reset Motor.
2. N.C.	ASW-B-2	E-51	98-16 60-1	Gray-Black Brown	Opens Red Letter Game search winner circuit.
3. N.C.	ASW-B-2	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-2	D-25	95-20 61-2	Gray-White Brown-Red	Opens guaranteed Extra Ball #1 Step-Up Coil.

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".

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
SCORE LOCK RELAY COIL	G-32-2500	A-54	31-15 93-14	Yellow-Red Gray-Yellow	Energized by a Play Scores Re. Sw. Circuit via Blue Button play.
1 R. N.O.	ASW-R1-8	B-54	40-15 93-14	Green Gray-Yellow	Completes a lock-in circuit to this Coil.
2 R. N.O.	ASW-R1-3	E-58	38-5 65-16	Yellow-Black Brown-White	Completes an additional Spotting Disc Circuit to Color Zone Score Unit Discs (#36) for score step-ups during Blue Button Play.
3 R. N.O.	ASW-R1-3	B-28	21-5 50-17	Blue-Red White	Completes a circuit to the Double Fea. Unit Step-Up Coil (X2 - X4).
4 R. N.O.	ASW-R1-3	E-58	18-14 31-18	Red-Black Yellow-Red	Completes an additional Spotting Disc circuit to Color Zone Score Unit Discs (#120) for score steps during Blue Button play.
1 F. N.O.	ASW-R1-3	E-58	58-11 14-6	White-Black Red-Green	Completes an additional spotting Disc circuit to Color Zone Score Unit Discs (#64) for score steps during Blue Button play.
2 F. N.O.	ASW-R1-3	F-56	81-11 53-15	Black-Red White-Yellow	Completes a B. B. Step Relay Circuit to the Mixer #3 Disc for multiple color zone score advances.
3 F. N.O.	ASW-R2-4	E-31	74-12 51-21	Orange-Green White-Red	Cuts off Feature Unit Advances during Blue Button Play.
PLAY SCORES RELAY COIL	G-32-2500	A-55	31-15 85-15	Yellow-Red Black-White	Energized by Blue Button play (via Control Unit Cam Sw. 3C).
1 R. N.O.	ASW-R1-8	B-55	57-13 85-15	White-Orange Black-White	Completes a lock-in circuit to this Coil.
2R. N.O.	ASW-R1-3	B-56	10-17 20-6	Red Blue	Completes an additional direct Wiper Feed Circuit to the Color Zone Score Discs (4, 6, 8, 12, 16, 24) for Score Steps during Blue Button play.
3 R. N.O.	ASW-R1-3	B-54	43-14 93-14	Green-Yellow Gray-Yellow	Completes a circuit to energize the score lock relay to eliminate Fea. Play Step-Ups & add circuits to Score Step-Ups.
4 R. N.C.	ASW-R2-4	H-8	56-15 31-16	White-Brown Yellow-Red	Cuts off circuit to front glass Feature Lites.
1 F. T.	ASW-R3-4	H-31	25-15 95-2 21-15	Blue-White Gray-White Blue-Red	Lites "Blue Button For Scores" on Front Glass.
2 F. T.	ASW-R3-4	E-22	36-4 27-7 41-6	Yellow-Brown Blue-Orange Green-Red	Features step-up control circuit thru Mixer #2 Relay.
FEATURES LOCK RELAY COIL	G-33-2800	A-54	31-15 53-14	Yellow-Red White-Yellow	Energized by a Play Fea. Relay Sw. via Green Button play.
1 C. N.O.	ASW-R1-8	B-54	40-15 53-14	Green White-Yellow	Completes a lock-in circuit to this Coil.
2 C. N.O.	ASW-R1-3	C-31	45-6 90-13	Green-White Gray	Completes an additional features step-up circuit to the Spotting Disc during Green Button play.
3 C. N.C.	ASW-R2-4	E-20	52-17 41-17	White-Blue Green-Red	Cuts off a color zone score advance circuit thru the Mixer #4 Relay.
4 C. N.C.	ASW-R2-4	A-26	70 10-20	Orange Red	Opens the complete Double Feature Advance Circuit (X2 - X4).

BACK DOOR 7 RELAY BANK - TOP

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
PLAY FEATURES RELAY COIL	G-32-2500	A-54	31-15 61-13	Yellow-Red Brown-Red	Energized thru Green Button play (via Control Unit Cam Sw. 3B).
1 R. N.O.	ASW-R1-8	B-54	81-13 61-13	Black-Red Brown-Red	Completes a lock-in circuit to this Coil.
2 R. N.O.	ASW-R1-3	B-54	43-14 53-14	Green-Yellow White-Yellow	Completes a circuit to energize the Features Lock Re. to cut off score advance & to add circuits to Features Step-Up.
3 R. N.C.	ASW-R2-4	A-57	70 38-9	Orange Yellow-Black	Cuts off entire Color Zone Score Step-Up Circuit.
1 F. N.C.	ASW-R2-4	G-12	74-15 15-17	Orange-Green Red-White	Cuts-Off circuit to Front Glass Score Lites.
2 F. T.	ASW-R3-4	H-31	95-2 36-15 23-15	Gray-White Yellow -Brown Blue-Yellow	Lites "Green Button For Features" on Front Glass.
MIXER #4 RELAY COIL	G-32-2500	A-22	70 23-4	Orange Blue-Yellow	Energized by the fea. game (X2 - X4) double trip re. sw.'s via the zone score step-up circuit & mixer unit #4 disc (percentage control).
1 C. N.O.	ASW-R1-8	A-20	18-7 23-4	Red-Black Blue-Yellow	Completes a lock-in circuit to this Coil.
2 C. N.C.	ASW-R2-4	D-26	36-19 51-5	Yellow-Brown White-Red	Cuts off the Extra Ball Step-Up Circuit.
3 C. N.C.	ASW-R2-4	D-30	80-8 74-12	Black Orange-Green	Cuts off entire Features Step-Up Circuit.
MIXER #2 RELAY COIL	G-32-2500	A-24	70 27-7	Orange Blue-Orange	Energized thru the feature game (X2 - X4) Sel. Fea. Disc (via Mixer #2 Disc) & Mystic Lines Fea. Disc for odds control during score steps (percentage control).
1 R. N.O. Resistor: 27-7 to 21-3	ASW-R1-8	D-23	13-3 27-7	Red-Yellow Blue-Orange	Hold-In Circuit to this Relay.
2 R. N.O.	ASW-R1-3	C-56	85-4 54-12	Black-White White-Green	Completes a direct circuit to the Color Zone Score Discs for score steps & also provides Score Disc Circuits to energize the B. B. Step Relay for multiple score step-ups.
3 R. N.O.	ASW-R1-3	E-27	56-6	White-Brown Orange-White	Provides a direct circuit (via Mixer #1 Disc & Reflex) to the Color Zone Step-Up Coils.
4 R. N.O.	ASW-R1-3	D-29	80-8 14-7	Black Red-Green	Completes a Spotting Disc Circuit which energizes the Double Fea. Unit Step-Up (X2 - X4).
MIXER CAM #3 RELAY COIL	G-32-2500	A-19	70 93-11	Orange Gray-Yellow	Energized via the Mixer Cam #3 Sw. & Control Unit Cam 8 Back Sw. when synchronized (percentage control).
1 C. N.O.	ASW-R1-8	A-19	14-9 93-11	Red-Green Gray-Yellow	Hold in circuit to this Relay.
2 C. N.O.	ASW-R1-3	A-61	65-6 10-12	Brown-White Red	Completes a Scores Step-Up Circuit (via color zone score discs #8 cir.) to energize the 1 Extra Step Relay Coil.
3 C. N.O.	ASW-R1-3	E-38	78-11 80-17	Orange-Black Black	Completes a direct circuit (via C.U. Cam 7 Sw.) to the new "X" Fea. Unit Step-Up.
4 C. T.	ASW-R3-4	D-56	25-11 18-8 27-11	Blue-White Red-Black Blue-Orange	Transfers a Score Step-Up Circ. to the Feature Game (X2 - X4) Color Zone Double Trip Coils (via Mixer #4 & #3 Discs).

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-R1-8	E-11	57-6 20-2	White-Orange Blue	Completes lock-in circuit to this Relay Coil
2 R. T.	ASW-R3-4	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-R3-4	G-31	23-6 30 93-4	Blue-Yellow Yellow Gray-Yellow	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-R1-8	F-52	38-15 63-8	Yellow-Black Brown-Yellow	Completes Hold-In Circuit to this Relay Coil.
2 R. N.O.	ASW-R1-3	B-8	21-3 91-11	Blue-Red Gray-Red	Completes a circuit to Game Reset System.
3 R. N.C.	ASW-R2-4	A-67	85-5 15-4	Black-White Red-White	Opens Reset Coil Circuit to Red Score Unit.
4 R. N.C.	ASW-R2-4	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-R2-4	D-37	80 60	Black Brown	Opens a circuit to the Replay Cams Index Coil.
2 F. N.C.	ASW-R2-4	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-R1-3	G-6	30 10-11	Yellow Red	Completes a circuit to Select Before & After 4-5 Ball Lites
2 R. N.O.	ASW-R1-3	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-R2-4	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-R2-4	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-R2-4	E-29	83-9 61-15	Black-Yellow Brown-Red	Opens the control circuit to Mystic Lines & Selection Fea. Step-Ups.
2 F. N.C.	ASW-R2-4	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-R2-4	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. 7E (See C. U. illust.).
1 R. N.O.	ASW-R1-3	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-R1-3	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-R1-3	G-21	21-3 81-3	Blue-Red Black-Red	Completes an odds control circuit regulating score step-ups, thru regular features discs & mixer #2 relay.
4 R. N.O.	ASW-R1-3	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-R1-3	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-R1-3	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-R2-4	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-R2-4	C-51	13-15 70	Red-Yellow Orange	Same as above (#2 F.)
4 F. N.C.	ASW-R2-4	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-R1-3	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-R2-4	C-51	13-15 90-1	Red-Yellow Gray	Allows X2 Pulse to operate for Multiple Step-Up & Win Step-Up on Replay Register.
3 C. N.C.	ASW-R2-4	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-R3-4	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 NEW X FEA. RELAY UNIT

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
"X" FEATURE RELAY NO. 1 COIL	G-33-2800	A-40	70 90-2	Orange Gray	Both "X" Relays are energized when this Fea. is Lit ("X" Fea. Disc closed at top). Provides additional scores & fea. steps before 3rd ball play.
1. N. C.	ASW-R2-4	G-21	71-12 91-8	Orange-Red Gray-Red	Opens a percentage circuit to the Mixer #2 Relay (via Mixer #2 Disc & Sel. Fea. Disc).
2. T.	ASW-R3-4	B-7	53-5 60-11 80-18	White-Yellow Brown Black	Transfers a Shutter Motor Circuit to complete a hold in circuit to the Mixer Latch Coil & Timer Cams Index Coil until 3rd ball is shot.
3. T.	ASW-R3-4	B-28	21-5 51-16 54-2	Blue-Red White-Red White-Green	Directs a Spotting Disc Cir. to the Double Fea. Step-Up Coil (X2 - X4)
"X" FEA. RELAY NO. 2 COIL	G-32-2500	A-40	70 90-2	Orange Gray	Both "X" Relays are energized when this Fea. is Lit ("X" Fea. Disc closed at top).
1 R. N. C.	ASW-R2-4	B-27	50-17 20-7	White Blue	Opens a circuit to the double fea. unit disc (Note Function of "X" 1 Relay #3 Sw.).
2 R. N. C.	ASW-R2-4	A-62	65-6 31-5	Brown-White Yellow-Red	Opens a percentage circuit to the 1 extra step relay (color zone score step-up).
3 R. N. C.	ASW-R2-4	F-20	81-3 95-4	Black-Red Grey-White	Opens a direct percentage circuit to the Mixer #2 Relay.
4 R. N. C.	ASW-R2-4	F-59	25-7 14-6	Blue-White Red-Green	Opens a spotting Disc circuit (1 of 2) to the Score Discs (64 score). Altering color zone score step-up percentage.
1 L. N. C.	ASW-R2-4	F-59	43-6 18-14	Green-Yellow Red-Black	Opens a Spotting Disc Circuit (1 of 2) to the Score Discs (120 score) altering color zone score step-up percentage.
2 L. N. C.	ASW-R2-4	F-30	83-3 61-15	Black-Yellow Brown-Red	Opens a Mixer #1 Disc Circuit (1 of 6) to the Reflex Disc which controls Fea. Unit Step-Ups (percentage control).
3 L. N. C.	ASW-R2-4	F-56	63-4 57-11	Brown-Yellow White-Orange	Opens a percentage control circuit (1 of 3) to the Color Zone Score Step-Up Units.

PLAYFIELD PANEL UNITS

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
PANEL SWITCHES Note: Switch Stack No.'s Start at Bottom of Stack					
Ball Runway Sw. N.O. (Resistor)	ASW-A1-30	D-53	38-8 30	Yellow-Black Yellow	Completes a circuit to Lifter Start Relay
Ball Gate Sw. (Top) N.C.	ASW-A2-5	E-53	31-4 36	Yellow-Red Yellow-Brown	Opens Lifter Start Relay Lock-In Circuit
Yellow R.O. Panel Sw. N.O.	ASW-A10-16	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-A10-16	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).
SHUTTER PANEL SWITCHES 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-C2-17	F-41	93-15 15-5	Gray- Yellow Red-White	Opens winners circuit to entire scoring system
2. N.O. C.W.O.	ASW-C2-11	B-6	45-18 51-15	Green-White White-Red	Completes a Circuit to the Mixer Latch Coil & Timer Cams Index Coil.
3. N.C. C.W.O.	ASW-C2-11	F-23	90-3 25-18	Gray Blue-White	Opens entire Red Letter Win-Step-Up System.
4. N.C. C.W.O.	ASW-C2-11	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-C1-29	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-C1-29	B-8	91-11 53-5	Gray-Red White- Yellow	Completes a Red Letter Winner Circuit to Shutter Motor
7. C.W.O.	ASW-C111-1	E-19	21-3 27-15 57-14	Blue-Red Blue-Orange White-Orange	Completes Mystic-Lines A-B-C Homing Circuit (Reset)
LIFTER START RELAY					
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-R1-8	C-53	36 38-8	Yellow-Brown Yellow-Black	Completes lock-in circuit to this Relay Coil
2. N.C.	ASW-R2-4	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-R2-4	D-13	80-15 31-3	Black Yellow-Red	Opens a circuit to the ball lifter motor
4. N.C.	ASW-R2-4	E-9	56-9 18-3	White-Brown Red-Black	Opens a circuit to the Shutter Motor
PLAYFIELD SHUTTER MOTOR UNIT Note: Shutter Motor Cams are numbered (1, 1X, 2, 3, 4, 5, 5A, 6, 6X) the motor side. Cam Switch Stacks are lettered (A, B, C etc.) from Bottom of stack to Top.					
SHUTTER CAM MOTOR	E-119-379	A-7	70 53-5	Orange White- Yellow	Energized thru the start relay circuit. Also thru the red letter win, Extra Ball & "X" fea. circuits.

PLAYFIELD PANEL UNITS

Switch/Coil	Part No.	Location on Diagram	Wire No.	Wire Color	Function
Playfield Shutter Motor (Cont'd)					
Cam 1 N.O. Sw. A	ASW-C1-27	E-6	53-5 30	White-Yellow Yellow	Completes Carryover Circuit to the Shutter Motor.
Cam 1 N.C. Sw. B	ASW-C2-15	G-23	21-3 90-3	Blue-Red Gray	Opens complete Red Letter Game Circuit.
Cam 1 T. Sw. C	ASW-C12-2	G-40	21-3 93-15 63-8	Blue-Red Gray-Yellow Brown-Yellow	Opens Winners Search & Score Circuit & Energizes a Hold-In Circuit to the Red Letter Win Relays #1 & #2.
Cam 1X N.C. Sw. A	ASW-C2-6 (.O.W.O.)	F-10	21-3 65-2	Blue-Red Brown-White	Opens a Timer Circuit so that the Timer can not step while starting a new game.
Cam 2 N.C. Sw. A	ASW-C1-27 (C.W.O.)	D-13	31-3 36-3	Yellow-Red Yellow-Brown	Opens a circuit to the Ball Lifter Motor.
Cam 3 N.O. Sw. A	ASW-C1-27 (O.W.O.)	B-67	30 85-5	Yellow Black-White	Completes a circuit to the games Stepping Unit Reset Coils.
Cam 3 N.O. Sw. B	AS-C1-28 (O.W.O.)	B-10	90-20 30	Gray Yellow	Completes a circuit to the Trip Bank Reset Motor.
Cam 4 N.O. Sw. A	ASW-C2-6 (C.W.O.)	D-7	18-3 57-7	Red-Black White-Orange	Completes a hold-in circuit to the Shutter Motor.
Cam 4 N.O. Sw. B	ASW-C2-2	F-7	45-8 18-3	Green-White Red-Black	Completes a hold-in circuit to the Shutter Motor.
Cam 4 N.O. Sw. C	ASW-C2-2	G-52	21-3 63-8	Blue-Red Brown-Yellow	Completes a hold-in circuit to the Red Letter Win Relays #1 & #2.
Cam 5 T. Sw. A	ASW-C3-8	C-6	61 10-10 51-15	Brown-Red Red White-Red	Directs the Start Relay, Shutter Motor circuit to the C. U. Timer Cams Index Coil & Mixer Latch Coil.
Cam 5 N.O. Sw. B	ASW-C2-3 (C.W.O.)	F-53	31-4 90-9	Yellow-Red Gray	Completes a circuit to the Lifter Start Relay.
Cam 5 N.O. Sw. C	ASW-C2-2 (C.W.O.)	B-41	38-20 80-16	Yellow-Black Black	Opens a circuit to the "All 4 Stars Replay Counter" Coil.
Cam 5X N.C. Sw. A	ASW-C1-27 (O.W.O.)	G-17	40-8 21-3	Green Blue-Red	Opens entire Ball Count Circuit, Mystic Lines Circuit R Button & Roll-Over Circuit - also Fea. Game Circuit.
Cam 5X N.C. Sw. B	ASW-C1-28 (O.W.O.)	G-15	10-13 40-8	Red Green	Opens entire Mystic Lines "Before/After 2-5 Ball" Trip Relay Circuit.
Cam 6 N.O. Sw. A	ASW-C10-5	D-10	71-8 30	Orange-Red Yellow	Completes a circuit to the Timer Unit Reset Coil.
Cam 6 N.O. Sw. B	ASW-C10-1	D-66	78-3 30	Orange-Black Yellow	Completes a circuit to the games Stepping Units Reset Coils.
Cam 6 N.O. Sw. C	ASW-C10-1	B-10	90-20 30	Gray Yellow	Completes a circuit to the Trip Bank Reset Motor.
Cam 6X N.C. Sw. A	ASW-C2-5	A-12	91-15	Gray-Red Orange	Opens a circuit to the Red Button Relay (start game cir.).

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
Ball Detector Relay					
BALL DETECTOR RELAY COIL	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-R1-8	F-13	51-3 41-4	White-Red Green-Red	Completes lock-in circuit to this Relay.
2. N.O.	ASW-R1-3	D-13	80-15 41-4	Black Green-Red	Completes 4 ball count circuit to the ball lifter motor.
3. N.C.	ASW-R2-4	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.
"R" BUTTON RELAY					
"R" BUTTON RELAY COIL	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-R1-3	F-11	21-3 54-11	Blue-Red White-Green	Completes a circuit to Timer Unit Reset Coil.
2. N.O.	ASW-R1-3	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.
COIN UNIT					
Note: This unit divides cash between the two cash boxes - see stepping unit switch & coil chart.					
BALL COUNT TROUGH SWITCHES					
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-A1-95	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-100-98	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-010-36	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-100-98	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-010-36	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-A2-60	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-A2-60	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-A2-60	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-A1-95	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
BALL LIFTER MOTOR UNIT Note: Switch Stack No. 's Start with Outside Stack from Bottom to Top					
BALL LIFTER MOTOR	E-119-339	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-C2-6	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-C1-2	E-13	91-1 30	Gray-Red Yellow	Completes carry-over circuit to Ball Lifter Motor.
1 C. N. C.	ASW-C2-3	C-7	57-7 53-5	White-Orange White- Yellow	Opens circuit to Shutter Motor.
1 D. N. O.	ASW-C1-2	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-3	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-2	E-11	93-17 14-5	Gray- Yellow Red-Green	Completes Ball Detector Circuit to Tilt Trip Relay
REPLAY KEY SWITCH UNIT (KUMBAC KEY) Switch No. 's Start from Bottom of Stack to Top					
KEY PLAYS METER	E-130-10	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-1	B-4	98-20 13-16	Gray-Black Red- Yellow	Opens circuit to Start Relay
2. N. O.	ASW-B-2	A-39	63-20 80-19	Brown- Yellow Black	Completes step-up circuit to Key Plays Meter & Replay Register.
3. N. O.	ASW-B-2	D-39	50-20 93-20	White Gray- Yellow	Completes safety circuit to Watch Sw. (Meter Register Step-Up).
4. N. O.	ASW-B-2	C-26	78-4 30	Orange-Black Yellow	Completes a circuit to the Anti-Cheat Relay.
5. N. O.	ASW-B-2	C-11	14-5 21-3	Red-Green Blue-Red	Completes a circuit to the Shutter Motor
1. (WATCH SW.) T.	ASW-C3-6	B-38	75-9 80-19 50-20	Orange-White Black White	Actuated by Key to step Replay Register & Key Play Meter

DOUBLE FEA. 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-R3-4	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-R3-4	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-R3-4	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-R3-4	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-R3-4	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-R3-4	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-R3-4	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-R3-4	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-R3-4	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-R3-4	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-R3-4	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-R3-4	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-R3-4	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-R3-4	G-35	56-3 40-17 90-12	White-Brown Green Grey	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-R3-4	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-R3-4	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-R2-4	B-45	18-21 98-10	Red-Black Gray-Black	Opens Win Circuit to Red X1/2 Win Relay.
2 A. T.	ASW-R3-4	H-37	41-16 71-16 43-4	Green-Red Orange-Red Green- Yellow	Directs Green Feat. Game Lite Circuit From 1/2 to Even
3 A. T.	ASW-R3-4	H-35	74-13 54-8 78-2	Orange-Green White-Green Orange-Black	Directs Red Feat. Game Lite Circuit From 1/2 to Even
4 A. T.	ASW-R3-4	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-R3-4	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-R3-4	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-R1-3	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-R1-3	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-R2-4	B-43	14-19 98-10	Red-Green Gray-Black	Opens Yellow Win Circuit to X1/2 Win Relay
4 A. T.	ASW-R3-4	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-R3-4	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-R3-4	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-R1-3	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-R1-3	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-R1-3	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-R1-3	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-R2-4	B-50	98-10 31-14	Gray-Black Yellow-Red	Opens Green Winner Circuit to X1/2 Win Relay
2 B. N.C.	ASW-R2-4	B-47	98-10 25-19	Gray-Black Blue-White	Opens Blue Winner Circuit to X1/2 Win Relay

DOUBLE FEA. GAME 4 RELAY BANK

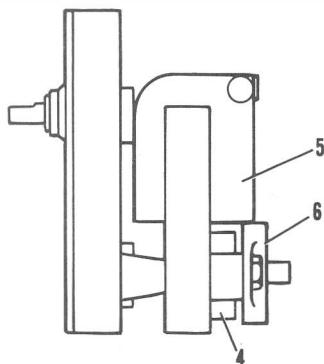
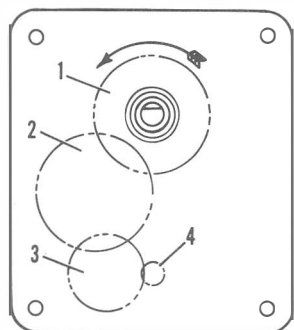
Relay Bank Information Reads from Left to Right
& Switch Stack No.'s start from Bottom of Stack.

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-R1-3	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-R2-4	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-R2-4	B-57	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-R2-4	D-31	90-15 40-16	Gray Green	Opens a circuit to the Mystic Lines Step-Up & Selection Fea. Step-Up
P. 3 RELAY COIL	G-33-2800	A-35	70 58-15	Orange White-Black	Energized thru Control Unit Cam #7
1. N.O.	ASW-R1-8	C-35	61-7 58-15	Brown-Red White-Black	Lock-In Circuit to this Relay Coil
2. N.O.	ASW-R1-3	D-31	40-16 45-6	Green Green-White	Completes a Control Circuit to Reg. Features Step-Up
3. N.O.	ASW-R1-3	A-57	41-18 38-9	Green-Red Yellow-Black	Completes the Score Step-Up & Double Fea. 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

Note: It is suggested that the ENTIRE MOTOR UNIT be ordered when encountering a replacement situation. Changing transmission parts is difficult since the unit is riveted together & the end result can not be guaranteed.

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

ALWAYS GIVE MODEL AND PART NO. WHEN ORDERING SERVICE PARTS

MISCELLANEOUS PARTS

Part No.	Description
W-826-51	"Hawaii" Schematic Wiring Diagram

BACK CABINET ASSEMBLY

G-292-37	"Hawaii" Backglass (std.)
M-1424-17	"Hawaii" Backglass (plexi-glass)
CA-1120-44	Back Cabinet - Painted
CA-1173B	Side Molding - Right
CA-1173-1B	Side Molding - Left
P-2830	Lock Bracket (on Molding)
M-281-31	Lock Set (Molding)
M-475-1	Nut Lock Set (Molding)
P-2831	Lock Brackets (Nut)
E-126-63	Cord Set
E-122-103	Transformer
A-3400-124	Back Cab. Insert & Lamp Socket Assy.
E-125-2	#47 Light Bulb (46 Req'd)
E-125-5	#55 Light Bulb (97 Req'd)
E-125-19	#55 Red Light Bulb (6 Req'd)
E-148-9	Fuse Block
E-133-10	10 Amp Fuse (6 Req'd)

BACK DOOR

CA-1120-43	Back Door Painted
M-281-25	Lock Set
P-2335-9	Hinge Set (Door Side)
A-1511-1	Hinge - Top (Cabinet Side)
A-1511-2	Hinge - Bottom (Cabinet Side)

FRONT CABINET ASSEMBLY

CA-1119-43	Front Cabinet (Painted)
CA-567-185	Side Door (Painted)
CA-1105-3	Cash Box Door (Painted)
M-281-54	Lock (Side Door)
M-281-58	Lock (Cash Box Door & Kum-Back Key)
A-2790-47	Side Door Cash Box
A-2790-48	Front Door Cash Box
A-3089-50	Cash Box Cover (Front Door Unit)
A-2618	Legs
M-106-1	Leg Bolt (8 Req'd)
M-163-4	Leg Adjuster
M-168-15	Game Ball Set (8)
G-213A	Top Playfield Glass
AS-187-17	Ball Shooter Assembly
A-100-7	Knob & Shooter Rod
SP-243	Front Compression Spring
AS-1835	Front Shooter Guide Unit
SP-200-24	Rear Compression Spring
P-2879	Spring Cap-Rear
P-2891-8	Retainer Ring
R-108-3	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-982-915	Switch & Brkt. Assy. (Buttons)
E-108-57	Off-On Switch

FRONT DOOR ASSEMBLY

AS-2041-77	Front Door Complete (single coin)
M-281-54	Front Door Lock
A-254-84	Hinge
M-1400-Series	Slug Rejector (Specify coin denomination)
AS-277-144	Coin Switch & Rejector Motor Assy. (Specify coin denomination)
AS-2517-12	Coin Deflector (cash box separator)
A-1729-15	Push Button Assy. (Yellow)

FRONT MOLDING ASSEMBLY

AS-1305-58	Front Molding Assy. (complete)
A-1252-17	"A" Button & Pin
A-1272-18	"B" Button & Pin
A-1272-19	"C" Button & Pin
A-1272-29	"R" Button & Pin
A-1272-60	"Selector" Button & Pin
P-2210-Series	Coin Entry Plate (Specify coin denomination)
SP-200-111	Compression Spring (Buttons)
P-801-214	Washer (Buttons)
P-448-6	Snap Washer (Buttons)
AS-982-916	Switch & Brkt. Assy. (A, B, C Buttons)
AS-982-759	Switch & Brkt. Assy. (R Button)

PLAYFIELD PANEL

AS-2042-145	Panel Unit (Complete)
CA-638-91	Panel (Painted)
C-326-9	White Light Shield Post
E-125-2	#47 Light Bulb (8 Req'd)
M-170A	Rebound Spring (8 Req'd)
C-119-21	Red Bumper Post (2 Req'd)
C-119-23	Yellow Bumper Post (27 Req'd)
R-135	Bumper Rubber (Double Units)
R-243	Bumper Rubber (Yellow Post)
R-243-2	Bumper Rubber (Red Post)
R-115-4	Ball Rebound Rubber
S-196	Playfield Pin (Springs)
SP-112	Long Panel Spring (8 Req'd)
SP-112-1	Short Panel Spring (4 Req'd)
AS-1315	Ball Gate & Sw. Unit
C-153	Red Plastic Ball Lift Cover

ALWAYS GIVE MODEL AND PART NO. WHEN ORDERING SERVICE PARTS