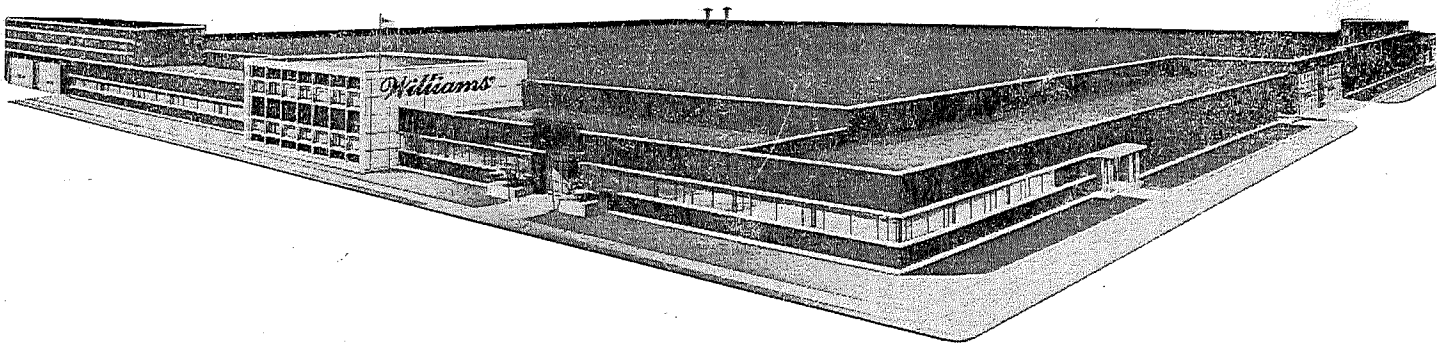


# Instruction Manual

for

# "ORION"



*Williams*<sup>®</sup> ELECTRONICS, INC.  
SUBSIDIARY OF THE SEEBURG CORPORATION

3401 N. California Ave.  
Phone 267-2240

Chicago, Ill. 60618, U.S.A.  
Cable Address: Wilcoin

## **GENERAL INSTRUCTIONS FOR SHUFFLE ALLEY**

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1. **INSTALLATION:** See Installation Instructions. After game is assembled, plug in connection jacks tightly. Plug line cord into A.C. ONLY, 60 cycles, 115 volts. The power to this game is controlled by a toggle switch which is located under the front part of the cabinet.
2. In low voltage areas (105 Volts or less) an additional boost in the output voltage of the transformer can be obtained by switching Rotary Adjustment Jack to "LOW".
3. To prevent abuse and cheating of this game, a vibration switch is installed on the back-door. Instructions for sensitivity are located adjacent to the switch.
4. To make the playfield rollover switches accessible for servicing, remove two screws from the access panel located directly below the switches and pull panel forward.
5. To make the retractable pins accessible for servicing, remove (2) wood screws from the top of the hood panel and lift panel.
6. To remove pin panel completely, remove (2) shipping screws from bottom front of pin panel, plus (2) screws from bottom member of hood frame, drop hood glass, disconnect jacks, then slide pin panel forward.
7. To change lite bulbs in hood insert, remove (2) screws from bottom member of hood frame and drop hood glass.
8. To remove back glass, pull back on lock brackets at inside top of back box. From front of game, lift glass up and out.
9. The equipment panel (insert) is hinged for better servicing.
10. This game has multiple methods of play. Press the button on the front of the cabinet, at the start of the game, to select the type of scoring desired.
  - A. **REGULATION:** Scoring is identical to official bowling.
  - B. **STRIKES 90:** This game scores 90 for a strike, 60 for a spare. Player continues to shoot as long as he makes a strike. A spare, or blow, will advance to next players turn, or to next frame.
  - C. **BONUS SCORING:** The bonus game scores as indicated on the backglass. Frames 1 thru 7 score 300 for a strike and 200 for a spare. Frames 8 thru 10 score 600 for a strike and 400 for a spare. In addition, frames 1 thru 10 advance the BONUS SCORE, 400 for a strike and 200 for a spare. The BONUS SCORE on the backglass shows only the accumulated bonus of the player who is up. After the 10th frame each player shoots one additional frame to collect the accumulated bonus score. The full bonus is transferred to the players score for a strike. One half of the bonus is transferred to the players score for a spare. A blow loses the bonus score.
  - D. **DUAL FLASH:** Strike and spare scores are indicated by flashing lites. Lites stop on first shot if a strike is made. If a strike is not made, lites flash for spare score.
  - E. **FLASH SCORING:** Strike and spare scores are indicated by flashing lites. Lites stop flashing when the pins are hit on first shot.
11. For a faster playing game, the spare shot can be thrown immediately after the first shot. NO waiting for the score.

# WARRANTY

THE MOTORS IN ALL NEW WILLIAMS PRODUCTS  
ARE UN-CONDITIONALLY GUARANTEED FOR  
6 MONTHS FROM DATE OF PURCHASE.

ANY DEFECTIVE MOTORS RETURNED DURING THE  
WARRANTY PERIOD WILL BE REPLACED FREE OF  
CHARGE BY YOUR WILLIAMS DISTRIBUTOR.

## IMPORTANT NOTICE

WHEN ORDERING PARTS ALWAYS SPECIFY NAME OF  
UNIT, GAME AND SERIAL NUMBER, IN ADDITION TO A  
CLEAR DESCRIPTION OF THE PART AND PART  
NUMBER IF POSSIBLE.

UNIT PARTS LIST FOR "ORION"

UNIT NAME	CONTACT DISC	WIPER ASS'Y.	RATCHET GEAR ASS'Y.	MOTORS
STRIKE SPARE	C-6981	A-6443-6	A-6402-24	
FRAME CONTROL	C-6417	C-6520	A-6402A-12	SCORE (60C) 14A-7765
PLAYER UP	C-6417	C-6521	A-6405-5	SCORE (50C) 14A-7776
GAME SELECTION	C-6417	C-6521	A-6403	PIN RESET(60C) 14A-7820
EXTRA SHOTS	C-6414	A-6443-4	A-6402A-5	PIN RESET(50C) 14A-7777
COIN	C-6896	C-6443-5	A-6402A-5	FLASH (60C) 14A-7766
1 - 9	—	—	3A-7128	FLASH (50C) 14A-7775
TENS	—	—	3A-7128	
HUNDREDS	—	—	3A-7128	
THOUSANDS	—	—	3A-7128	
SCORE MOTOR	C-6418-9	C-6519-7	—	
FLASH MOTOR	C-6413-9	C-6520-8	B-6833	

COIL LIST FOR "ORION" SHUFFLE ALLEY

COIL NUMBER	DESCRIPTION	LOCATION
<u>SOLENOID COILS</u>		
A 24-975	Player Up Unit Step Up	Insert
	Frame Control Unit Step Up	Back Door
A 25-1000	Extra Shots Unit Step Up	Insert
	Coin Unit Step Up	Insert
	Strike Spare Unit Step Up ... (6 req'd.)	Back Door
B 27-1100	Frame Control Reset	Back Door
	Strike Spare Unit Reset ... (6 req'd.)	Back Door
	Extra Shots Unit Reset	Insert
	Player Up Unit Reset	Insert
	Coin Unit Reset	Insert
B 28-1450	Frame Drum Unit	Insert
	Score Drum Unit ... (24 req'd.)	Insert
	Pin Release Coil ... (10 req'd.)	Pin Panel
C 27-1300	Bell Coil	Back Door
D 22-1150	Relay Bank Reset Coil	Back Door
FL 26P-950/250	Game Selection Unit Step Up	Back Door
<u>RELAY COILS</u>		
M 31P-1500	1 - 9 Score Relay	Back Door
	10 - 90 Score Relay	Back Door
	100's Score Relay	Back Door
	Strike Spare Advance Relay	Back Door
	Strike Spare Reset Relay	Back Door
M1-32-2400	Coin Lockout Coil	Coin Chute
S 27-750	Relay Bank Coil	Relay Bank
S 29-950	Relay Bank Coils ... (17 req'd.)	Relay Bank
XM 29-1100	Coin Meter	Cabinet
Z 29P-1400	Coin Relay	Back Door
	Score Reset Relay ... (3 req'd.)	Insert
Z 30P-1800	Rollover Motor Relay	Back Door
	Player Reset Relay	Back Door
	Extra Shots Reset Relay	Back Door
	Score Control Relay	Back Door
	Score Motor Relay	Back Door
	Bonus Reset Relay	Back Door
	Bonus Relay	Back Door
Z 30P-1600	Flash Motor Release Coil	Back Door
Z 31P-2000	Rear Roll Over Relay	Back Door
	Pin Reset Relay	Pin Panel
	Flash Relay	Back Door
	Repeat Strike Relay	Back Door
	Bonus Lite Relay	Back Door
Z 32P-2700	Lock Relay	Back Door
<u>MOTORS &amp; TRANSFORMERS</u>		
14 A 7765	Score Motor - 60 Cycle	Back Door
14 A 7766	Flash Motor - 60 Cycle	Back Door
14 A 7820	Pin Reset Motor - 60 Cycle ... (2 req'd.)	Pin Panel
14 A 7775	Flash Motor - 50 Cycle	Back Door
14 A 7776	Score Motor - 50 Cycle	Back Door
14 A 7777	Pin Reset Motor - 50 Cycle ... (2 req'd.)	Pin Panel
15 A 6775	Transformer - 60 Cycle	Back Door
15 A 6776	Transformer - 50 Cycle	Back Door

# INSTRUCTIONS FOR ALTERING COIN CHUTES EQUIPPED WITH A FLIP-OVER DEVICE.

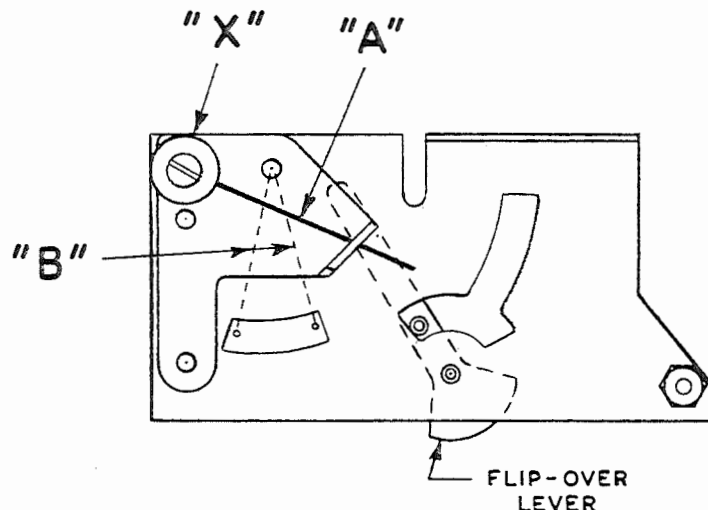
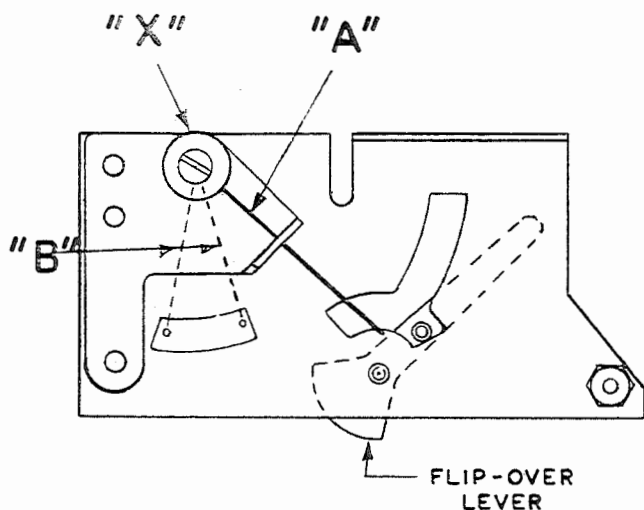
FOR 1 COIN - FOR 1 PLAY

OR

2 COINS - FOR 1 PLAY

FIGURE 1

FIGURE 2



## 1 COIN - FOR 1 PLAY (FIGURE 1):

Wire form "A" should be in position as shown in Figure 1. Flip-over lever should rebound from wire form "A" and return to position shown in Figure 1 everytime a coin is inserted. All coins pass over the coin trip switch wire "B".

## 2 COINS - FOR 1 PLAY (FIGURE 2):

Wire form "A" should be in position as shown in Figure 2 (see note). Flip-over lever should alternate from side to side. 1st coin should go to cash box without actuating coin trip switch wire "B", 2nd coin should pass the coin trip switch wire "B" and returns flip-over to position as shown in Figure 2.

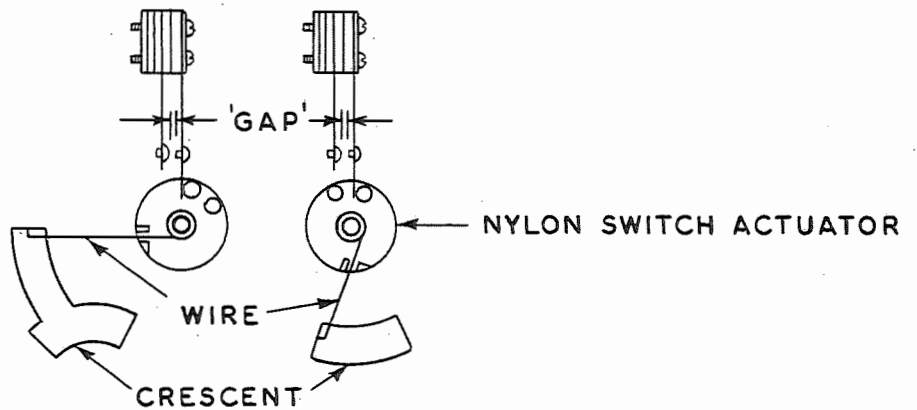
## NOTE:

To change from 1 coin play to 2 coin play or vice versa - loosen screw "X" and move screw, bushing & wire form "A" to position as required - shown in Figure 1 position as required - shown in Figure 1 or Figure 2.

When using 1 coin for 1 play, wire form "A" should not under any circumstances be allowed to enter the "Banana" slot and cause binding of flip-over lever.

## INSTRUCTIONS FOR COIN TRIP SWITCH ADJUSTMENT

WIRE SHOULD BE IN CONTACT WITH END OF CRESCENT OPENING WHEN BLADE ADJUSTMENT IS MADE.



Long blade should be in contact with nylon switch actuator and have a maximum overtravel of  $1/32$ .

or

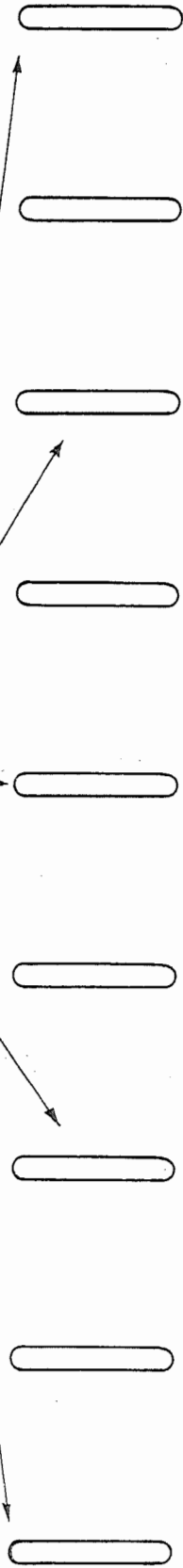
Using a gram gauge, tension of long blade should not exceed 10 grams.

### SWITCH ADJUSTMENT

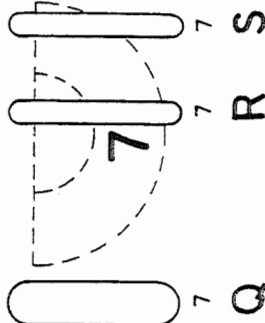
1. For small coins, such as dimes, adjust short blade so that the 'gap' between the silver contacts is .045 to .055.
2. For larger & heavier coins the 'gap' should be .045 to .060.
3. Do not adjust 'gap' closer than .040.

# PLAYFIELD SWITCHES DIAGRAM

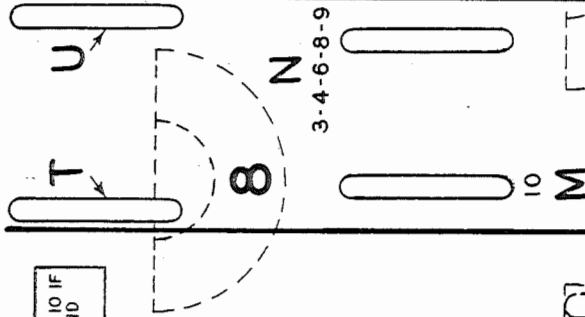
TOP 9 SWITCHES OPERATE 1ST & 2ND BALL RELAYS



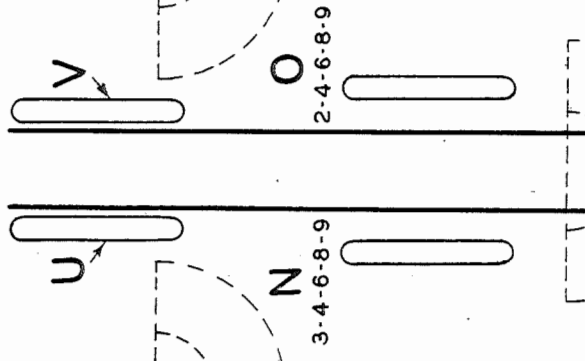
ON THE SPARE SHOT  
SWITCHES Q & R TRIP  
THE 10 IF HIT  
SIMULTANEOUSLY WHEN  
THE 1 IS DOWN



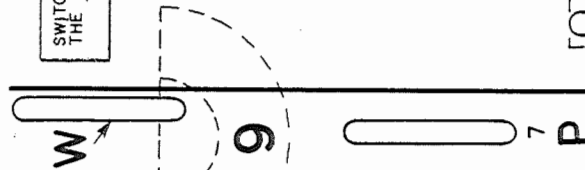
SWITCH T TRIPS THE 10 IF  
THE 3 & 9 ARE UP AND  
THE 1 IS DOWN



SWITCHES T & U TRIP 10  
IF HIT SIMULTANEOUSLY



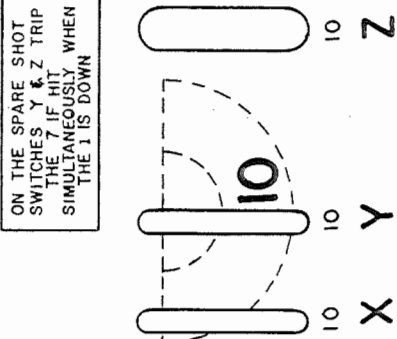
STRIKE ZONES SWITCHES G, H, M, N, O,  
P, T, U, V & W OPERATE ONLY WHEN 1  
IS DOWN, HOWEVER IF 1 IS DOWN ON  
THE 1st SHOT, THEY ARE INOPERATIVE  
ON THE SPARE SHOT.



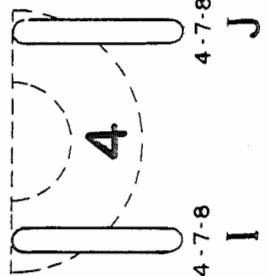
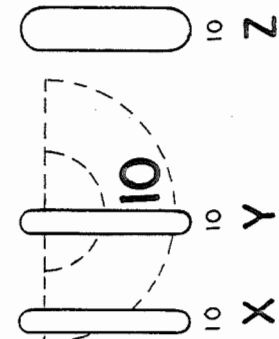
SWITCHES V & W TRIP 7  
IF HIT SIMULTANEOUSLY



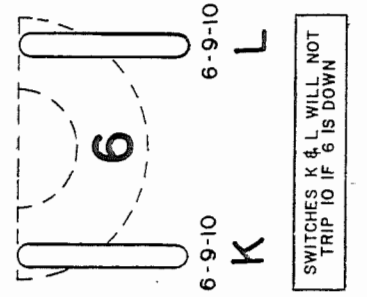
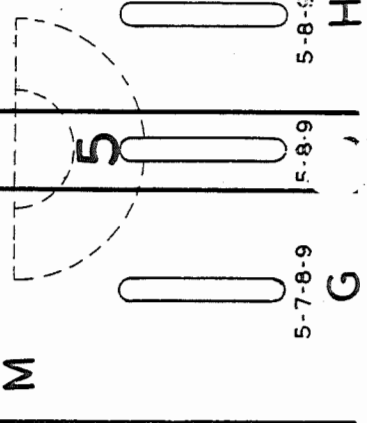
SWITCH W TRIPS THE 7 IF  
THE 2 & 8 ARE UP AND  
THE 1 IS DOWN



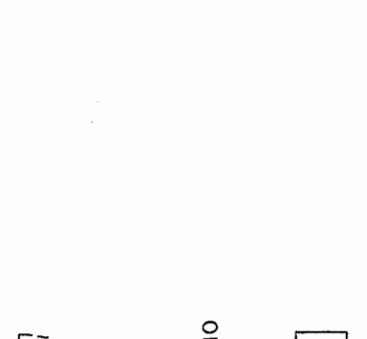
ON THE SPARE SHOT  
SWITCHES Y & Z TRIP  
THE 7 IF HIT  
SIMULTANEOUSLY WHEN  
THE 1 IS DOWN



SWITCHES I & J WILL NOT  
TRIP 7 IF 4 IS DOWN



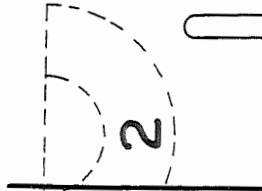
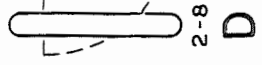
SWITCHES K & L WILL NOT  
TRIP 10 IF 6 IS DOWN



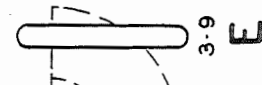
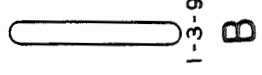
SWITCH C OPERATES ONLY WHEN HIT SIMULTANEOUSLY WITH SWITCH D  
 SWITCH C ALSO TRIPS 6 WHEN 2 IS UP AND 1 IS DOWN



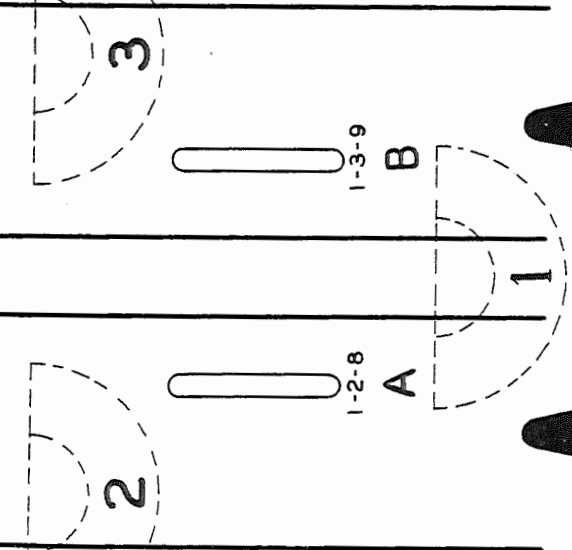
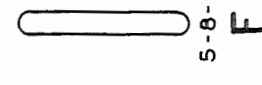
SWITCH D ALSO TRIPS THE 7 WHEN IT HAS BEEN HIT SIMULTANEOUSLY WITH SWITCH C, WHEN 2 IS UP 4 IS DOWN.



SWITCH E ALSO TRIPS THE 10 WHEN IT HAS BEEN HIT SIMULTANEOUSLY WITH SWITCH F, WHEN 3 IS UP 6 IS DOWN.



SWITCH F OPERATES ONLY WHEN HIT SIMULTANEOUSLY WITH SWITCH E  
 SWITCH F ALSO TRIPS 4 WHEN 3 IS UP AND 1 IS DOWN



# STRIKE ZONES

## EXPLANATION

**N** ← PLAYFIELD SWITCH LETTER  
 3-4-6-8-9 → REFERS TO RELAYS TRIPPED  
 DOWN MEANS BOWLING PIN IS TRIPPED  
 UP MEANS BOWLING PIN IS LATCHED & IN AN EXTENDED POSITION

## NOTES

THE 7-10 RAILROAD CAN BE PICKED-UP EASIER BY MOVING THE 7 SWITCH TO THE LEFT AND THE Q SWITCH TO THE RIGHT. THESE TWO SWITCHES ARE LOCATED IN WIDE SLOTS WHICH HAVE EXTRA DRILLED HOLES FOR THE NEW Q & Z SWITCHES LOCATIONS

SWITCHES M & P OPERATE IN ACCORDANCE WITH THE STRIKE ZONES CONTROL JACK



( SHUFFLE ALLEY )

# 25 DRUM TYPE UNITS ( BACK VIEW )

5 TH PLAYER

0 - 9  
UNIT

10 - 90  
UNIT

100'S  
UNIT

1000'S  
UNIT

3 RD PLAYER

0 - 9  
UNIT

10 - 90  
UNIT

100'S  
UNIT

1000'S  
UNIT

1 ST PLAYER

0 - 9  
UNIT

10 - 90  
UNIT

100'S  
UNIT

1000'S  
UNIT

6 TH PLAYER

0 - 9  
UNIT

10 - 90  
UNIT

100'S  
UNIT

1000'S  
UNIT

4 TH PLAYER

0 - 9  
UNIT

10 - 90  
UNIT

100'S  
UNIT

1000'S  
UNIT

2 ND PLAYER

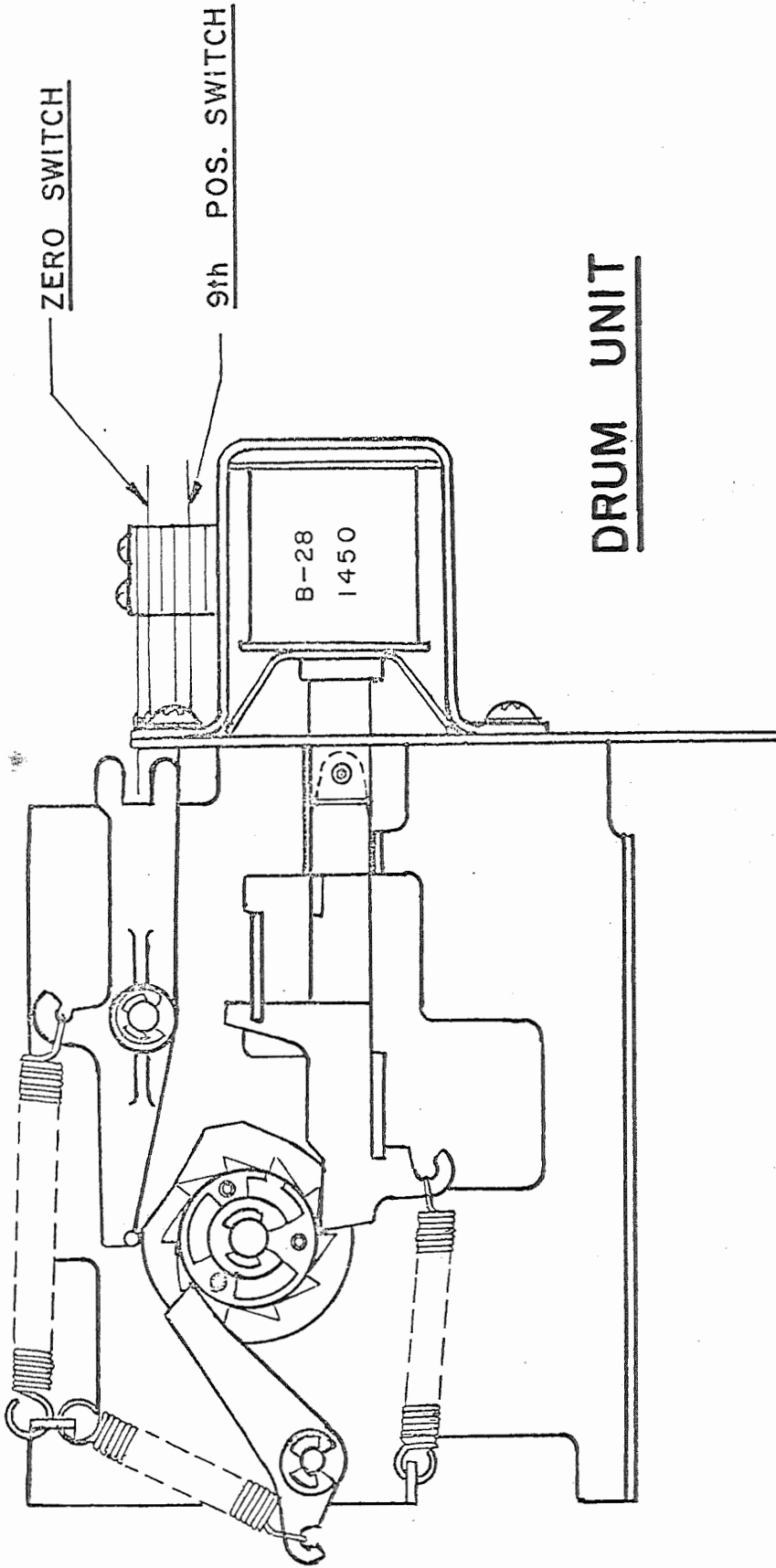
0 - 9  
UNIT

10 - 90  
UNIT

100'S  
UNIT

1000'S  
UNIT

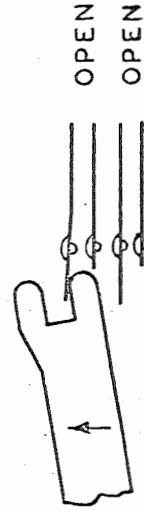
FRAME  
UNIT



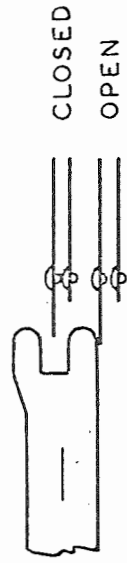
DRUM UNIT

SWITCH ADJUSTMENT:

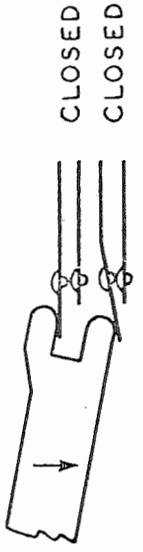
AT "0" OR INDEX POSITION BOTH SWITCHES ARE OPEN AS SHOWN.



AT 1st TO 8th POSITION TOP SWITCH CLOSED BOTTOM SWITCH REMAINS OPEN.



AT 9th POSITION BOTH SWITCHES ARE CLOSED AS SHOWN.



WHAT TO DO IF:

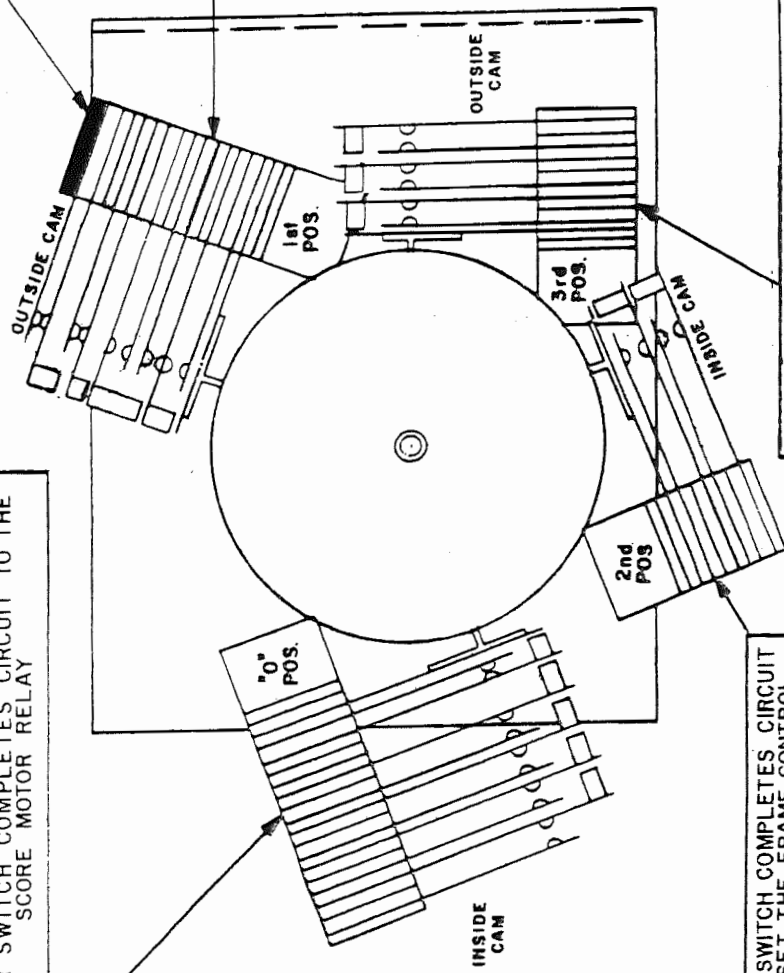
1. Lights are out, game is inoperative:
  - a. Check A.C. cord and plug for breaks, cuts or other damage.
  - b. Check fuses, located on back door.
  - c. Check master switch, located under the front end of the cabinet.
  - d. Check plugs and jacks for proper installation.
2. Lights are on, game is inoperative:
  - a. Check the 15 Amp fuse, heavy Black wire.
  - b. Check plugs and jacks.
3. Lights are out, game operates:
  - a. Check the 15 Amp fuse, heavy White wire and heavy Orange wire.
  - b. Check plugs and jacks.
  - c. Check lite bulbs.
4. Coin is accepted, game is inoperative:
  - a. Check Drop Chute Switch.
  - b. Check Coin Relay Coil and Switches.
  - c. Check Start Relay Switch, Black to Green-Yellow-White.
  - d. Check switch on Score Motor Relay, Red-White and Green-Yellow-White.
  - e. Check Front Door Slam Switch.
5. Drum Units fail to reset at start of game:
  - a. Check the switches on the Reset Relays.
  - b. Check the Zero Position Switches on the Drum Units.
6. Drum Units fail to score properly:
  - a. Check 1-9, 10-90 or 100's Score Relay Switches.
  - b. Check Wiper Fingers on Score Motor Disc.
  - c. Check 9th Position Switch on Drums.
7. Game Selection S.U. does not advance to 'Regulation' in reset cycle:
  - a. Check Game Selection S.U. Coil, Gray-Red and Black.
  - b. Check switch on 'B' Reset Relay, Gray-Red and Red-Black.
  - c. Check Game Selection disc., Red-Black. Also, sno-shoe wipers on that unit.
8. Player **does** not collect any bonus, after a strike or spare, in 11th frame of "Bonus" game.
  - a. Check switches, and operation, of Bonus Relay.
  - b. If Bonus Relay does not energize, check switch on 1-10 Relay (Gray-Red and Jumper). Also check make-break switch (Jumper, Gray, and Jumper), and operation, of 11th Frame Relay.
9. Game scores on first shot:
  - a. Check 1st & 2nd Ball Relays for proper reset.
  - b. Check Score Motor for over-riding.
10. Bowling Pins do not reset:
  - a. Check switch on Pin Reset Relay, Yellow and Gray-Black.
  - b. Check Zero Position Switch on Pin Reset Motor.
11. Game shows "Game Over" in 1st Frame:
  - a. Check Lock Relay.
  - b. Check switches on the Lock Relay.
  - c. Check Tilt Switch for proper adjustment.
  - d. Check Frame S.U. Unit for proper resetting.

# SCORE MOTOR SWITCHES

INNER SWITCH COMPLETES CIRCUIT TO THE GAME SELECTION STEP-UP  
 NEXT SWITCH COMPLETES CIRCUIT TO THE SCORE CONTROL RELAY  
 NEXT SWITCH OPERATES 2nd BALL RELAY.  
 NEXT SWITCH OPERATES THE SCORE MOTOR  
 OUTER SWITCH COMPLETES CIRCUIT TO THE SCORE MOTOR RELAY

BRASS PLATE GROUNDS WIPER FINGER TO RESET THE A, B & C RESET RELAYS

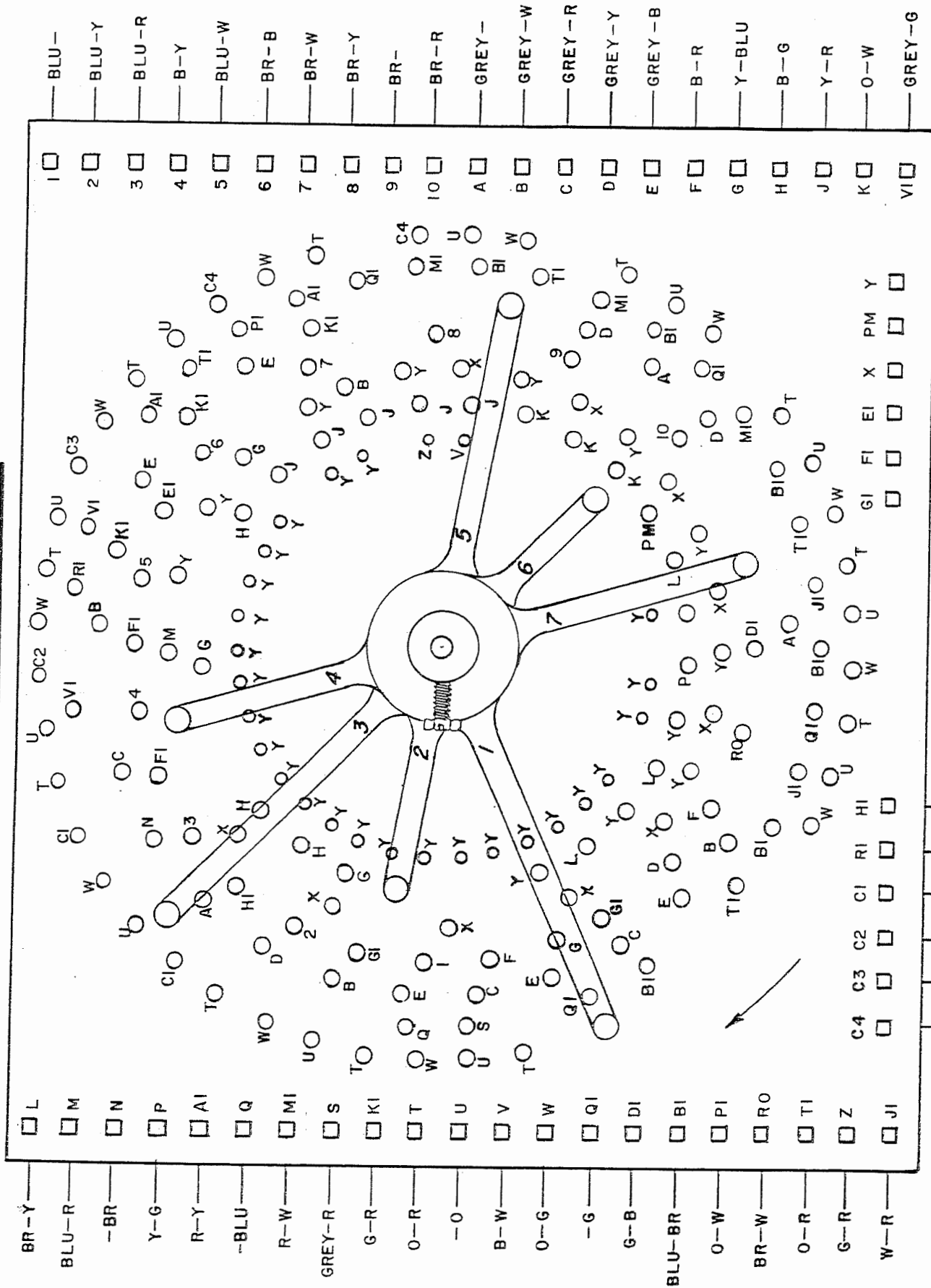
OUTER SWITCH COMPLETES A CIRCUIT TO OPERATE THE SCORE MOTOR.  
 NEXT SWITCH COMPLETES A CIRCUIT TO OPERATE THE ROLL-OVER MOTOR RELAY.  
 NEXT SWITCH OPERATES THE 2nd BALL "B" RELAY.  
 INNER SWITCH COMPLETES A CIRCUIT TO OPERATE THE FLASH MOTOR AND FLASH MOTOR RELEASE COIL. ALSO COMPLETES LOCKIN CIRCUIT TO REPEAT STRIKE RELAY.



INNER SWITCH COMPLETES CIRCUIT TO RESET THE FRAME CONTROL UNIT & THE COIN UNIT.  
 OUTER SWITCH COMPLETES A CIRCUIT TO THE BELL

OUTER SWITCH RESETS THE RELAY BANK (115 VOLTS).  
 NEXT SWITCH OPERATES THE SCORE MOTOR  
 INNER SWITCH OPERATES THE EXTRA SHOTS RESET, PLAYER-UP STEP-UP AND FRAME CONTROL STEP-UP.

# SCORE MOTOR DISC



BR-Y BLU-R -BR Y-G R-Y -BLU R-W GREY-R G-R O-R -O B-W O-G -G G-B BLU-BR O-W BR-W O-R G-R W-R

BLU- BLU-Y BLU-R B-Y BLU-W BR-B BR-W BR-Y BR- BR-R GREY- GREY-W GREY-R GREY-Y GREY-B B-R Y-BLU B-G Y-R O-W GREY-G

1 2 3 4 5 6 7 8 9 10 A B C D E F G H I J K VI

L M N P AI Q MI S KI T U V W QI DI BI PI RO TI Z JI

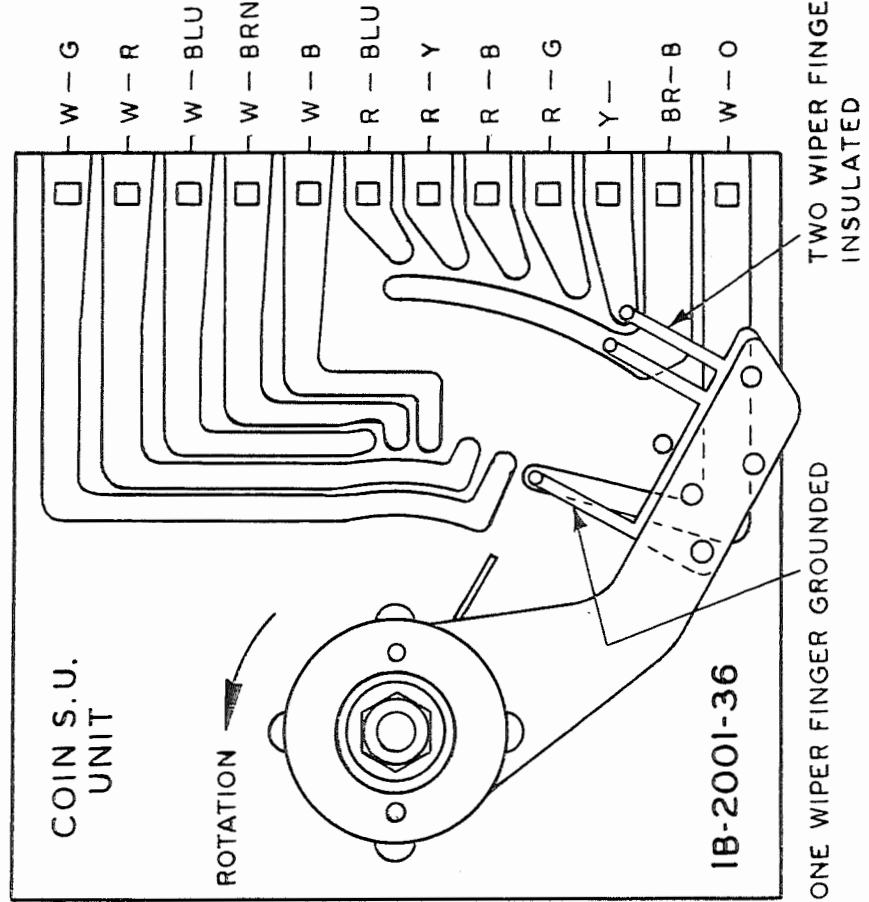
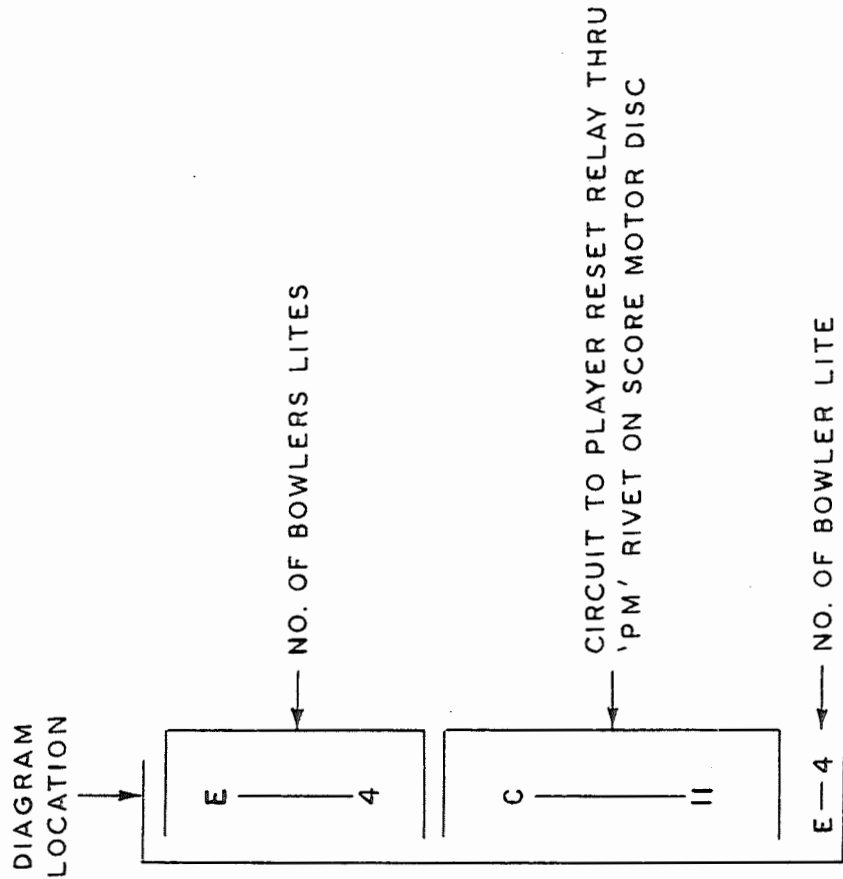
VIEW LOOKING AT  
 WIPER FINGERS  
 #1- Grounded, #3 & 6 Insulated  
 #2 & 5 Insulated, #4 & 7 Insulated

# SCORE MOTOR DISC

Diagram Location	Diagram Location	Diagram Location
L A-9	PULSES STRIKES-SPARE RESET RELAY THRU 'C' OR 'E' POSITIONS ON STRIKE-SPARE UNIT DISCS.	1 A-11 FROM SWITCH ON R.O. SW. CONTROL RE.
M C-12	IN CIRCUIT TO STRIKE RELAY FROM 'D1' RIVET.	2 A-11 FROM SW. ON 2 RELAY.
N C-11	TO PLAYER RESET RELAY FROM 'PM' RIVET.	3 A-11 FROM SW. ON 3 RELAY.
P A-9	PULSES STRIKE-SPARE RESET RELAY WHEN SPARE FOLLOWS A STRIKE.	4 A-11 FROM SW. ON 4 RELAY.
AL A-6	TWO RIVETS TO PULSE 10-90 SCORE RELAY IN "STRIKE 90", OR TO PULSE 100'S SCORE RELAY IN 11TH FRAME OF "BONUS" GAME.	5 A-11 FROM SW. ON 5 RELAY.
Q C-9	OPERATES EXTRA SHOTS RESET RELAY FROM 'V' RIVET.	6 A-12 FROM SW. ON 6 RELAY.
ML A-7	IN CIRCUIT TO 100'S SCORE RELAY THRU FLASH MOTOR DISC.	7 A-12 FROM SW. ON 7 RELAY.
S B-10	TO PIN RESET RELAY FROM 'Z' RIVET.	8 A-12 FROM SW. ON 8 RELAY.
KL A-9	IN CIRCUIT TO STRIKE-SPARE RESET RELAY IN "DUAL" & "FLASH" GAMES.	9 A-12 FROM SW. ON 9 RELAY.
T A-3	11 RIVETS TO PULSE "C" RESET RELAY AT START OF GAME.	10 A-12 FROM SW. ON 10 RELAY.
U A-3	11 RIVETS TO PULSE 'B' RESET RELAY AT START OF GAME.	A A-8 3 RIVETS-IN CIRCUITS TO 10-90 SCORE RE., STRIKE-SPARE RESET RE., & SCORE CONTROL RE.
V C-9	FEEDS 'Q' RIVET FROM CIRCUITS WHICH ORIGINATE IN THE EXTRA SHOTS UNIT DISC.	B A-8 4 RIVETS-SAME AS 'A' (ABOVE).
W A-3	11 RIVETS TO PULSE 'A' RESET RELAY AT START OF GAME.	C A-9 3 RIVETS-IN CIRCUITS TO 10-90 SCORE RE. & STRIKE-SPARE RESET RELAY.
Q1 A-8	IN CIRCUIT TO STRIKE-SPARE RESET RELAY AT START OF GAME, & 11TH FRAME OF "BONUS".	D A-8 4 RIVETS-SAME AS 'A' (ABOVE).
D1 C-12	FEEDS 'M' RIVET IN ALL GAMES EXCEPT "REGULATION".	E A-9 4 RIVETS-SAME AS 'C' (ABOVE).
B1 A-7	CIRCUIT TO 10-90 SCORE RELAY IN "STRIKE 90" & 100'S SCORE RELAY IN 11TH FRAME OF "BONUS".	F A-10 2 RIVETS PULSE THE STRIKE-SPARE ADVANCE RELAY ON A STRIKE. (1 RIVET ON A SPARE.)
FL A-7	CIRCUIT TO 100'S SCORE RFLAY THRU GLASH MOTOR DISC.	G A-8 PULSES 10-90 SCORE RELAY, ON 1ST SHOT, WHEN PLAYER IS HOLDING A SPARE OR TWO STRIKES. ALSO, WHEN A BLOW FOLLOWS A STRIKE.
RO C-12	TRIPS ROLLER SWITCHES CONTROL RELAY, THRU SWITCH ON #1 RELAY.	H A-8 REFRIGERS SCORE CONTROL RELAY, ON 1ST SHOT, WHEN PLAYER IS HOLDING A SPARE OR TWO STRIKES. ALSO, WHEN A BLOW FOLLOWS A STRIKE.
T1 A-8	IN CIRCUIT TO STRIKE-SPARE RESET RELAY AT START OF GAME, & 11TH FRAME OF "BONUS".	J A-8 5 RIVETS TO PULSE 10-90 SCORE RELAY. 2 OF THESE RIVETS ON A STRIKE-SPARE OR SPARE-STRIKE COMBINATION. 3 RIVETS ON 3 STRIKES.
Z B-10	FEEDS RIVET 'S' FROM SWITCH ON SCORE CONTROL RELAY.	K A-9 TO PULSE STRIKE-SPARE RESET RELAY, ON 1ST SHOT, WHEN PLAYER IS HOLDING A SPARE OR TWO STRIKES. ALSO, WHEN A BLOW FOLLOWS A STRIKE.
JL A-7	IN CIRCUIT TO 100'S SCORE RELAY, THRU FLASH MOTOR DISC.	VL A-7 2 RIVETS PULSE 100'S SCORE RELAY ON A STRIKE IN "DUAL" OR "FLASH" GAMES. 50 VOLT COMMON.
C4 C3 C2 C1	USED IN MULTIPLE COIN CIRCUIT ONLY.	Y FEEDS 'N' RIVET FROM COIN S.U. DISC. & PLAYER S.U. DISC.
RL A-6	ONE PULSE TO 10-90 SCORE RELAY, FOR A STRIKE IN "STRIKE 90" GAME.	PM 10 RIVETS TO PULSE THE 1-9 SCORE RELAY.
HL A-5	ONE PULSE TO 100'S SCORE RELAY, FOR A STRIKE IN "BONUS" GAME.	A-11 1 RIVET TO PULSE THE 100'S SCORE RE., ON A STRIKE, IN THE 8-9 OR 10TH FRAMES OF A "BONUS" GAME.
FL A-5	2 RIVETS TO PULSE THE 100'S SCORE RE., ON A STRIKE OR SPARE, IN THE 8-9 OR 10TH FRAMES OF A "BONUS" GAME.	A-12
BL A-5	2 RIVETS TO PULSES THE 100'S SCORE RE., ON A STRIKE OR SPARE, IN FRAMES 1 THRU 10 OF A "BONUS" GAME.	A-5

# COIN S.U. UNIT DISC

THIS UNIT RESETS AT THE START OF A NEW GAME, AND ADVANCES EVERY TIME THE COIN RELAY IS PULSED

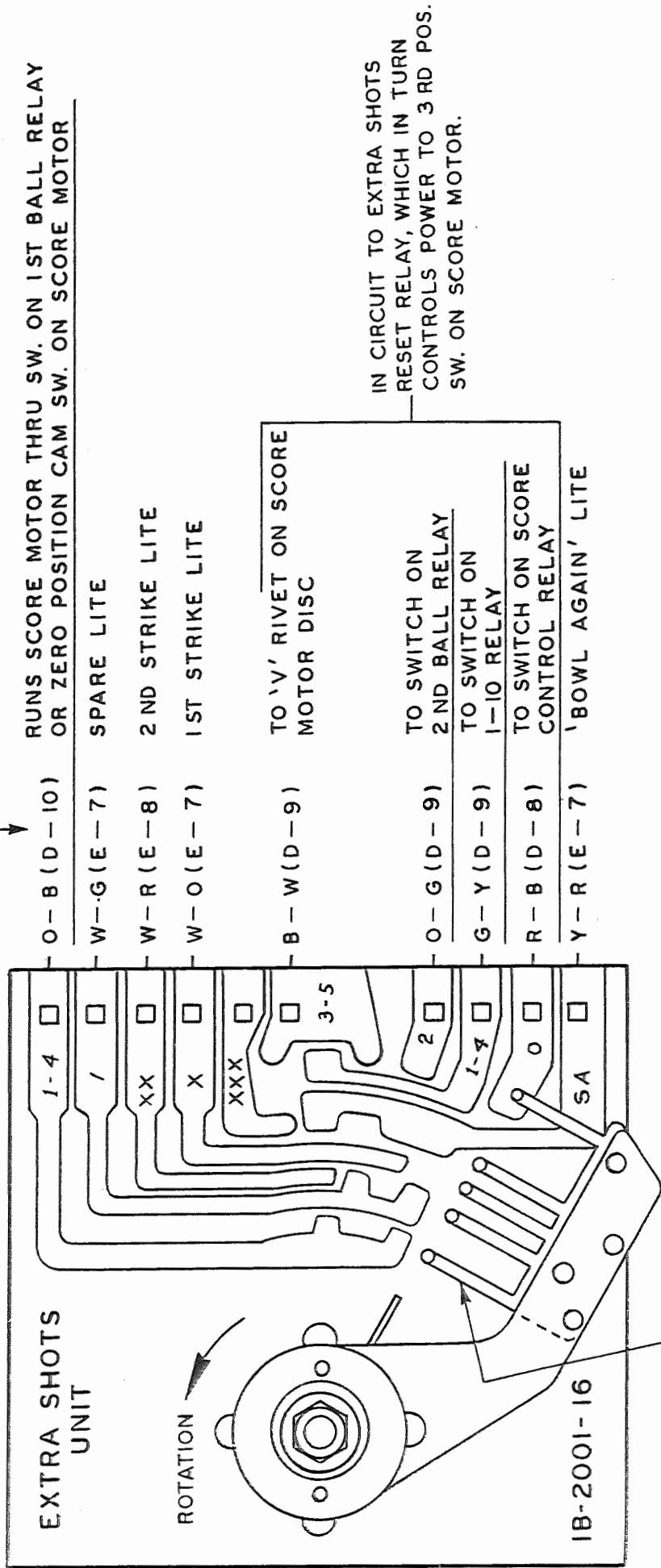


VIEW LOOKING AT WIPER FINGER SIDE WITH WIPER IN RESET POSITION

# EXTRA SHOTS UNIT DISC

THIS UNIT OPERATES IN THE 10th FRAME. IT DOES NOT OPERATE IN "STRIKES 90" GAME. IT ADVANCES TWO TIMES PER STRIKE AND ONCE ON A SPARE. THE FUNCTION OF THIS UNIT IS TO GIVE EXTRA SHOTS TO THE PLAYER.

DIAGRAM LOCATION

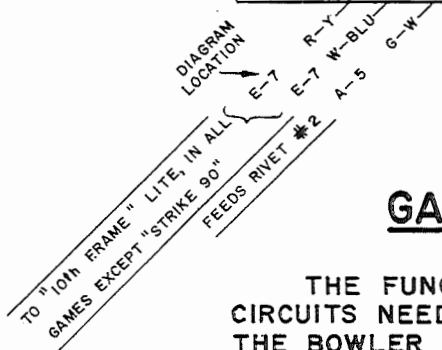
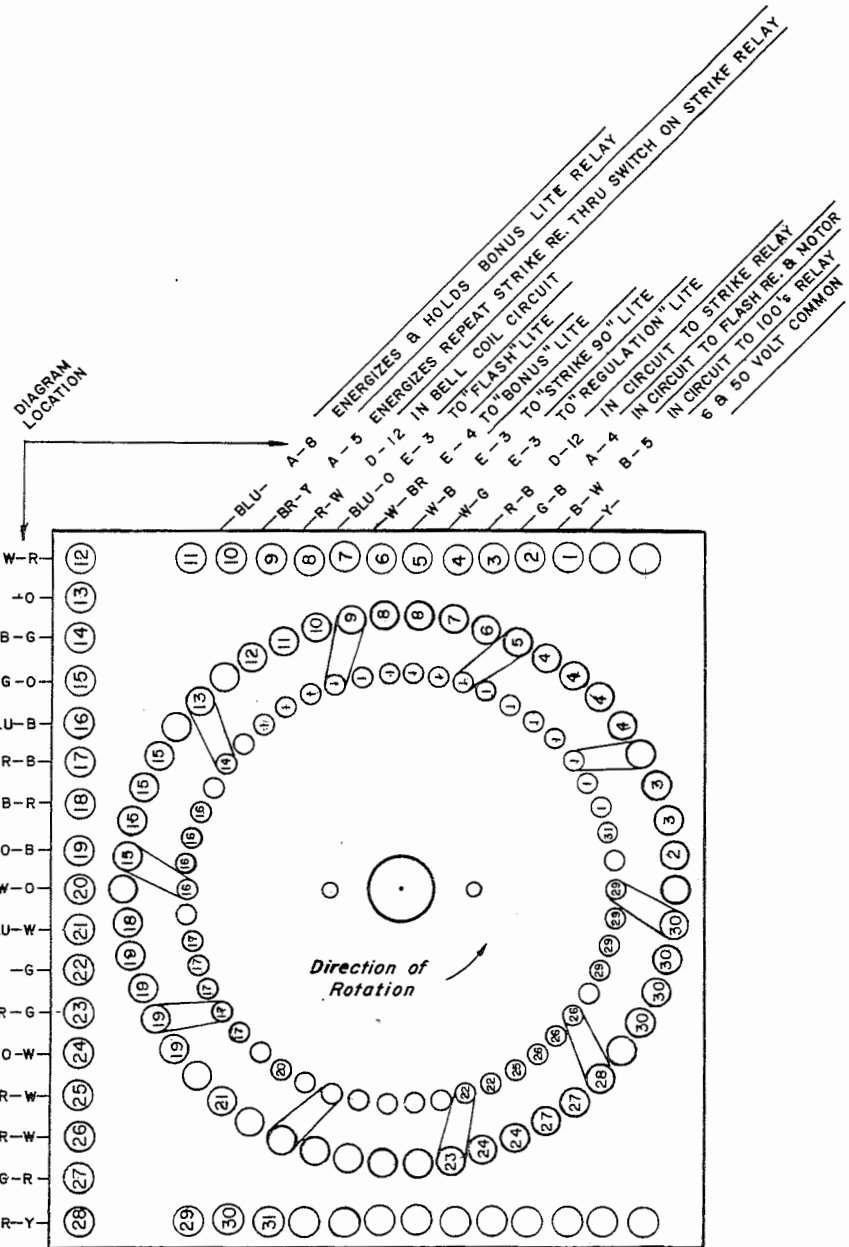


FIVE WIPER FINGERS GROUNDED TO YELLOW VIEW LOOKING AT WIPER FINGER SIDE AND WITH WIPER IN RESET, OR ZERO POSITION



Printed circuit WIPER-10 pairs of insulated SNO-SHOE fingers  
View looking at SNO-SHOE fingers side with wiper in REGULATION position

TO "DUAL" LITE	E-3	W-R
IN CIRCUIT TO ENERGIZE SCORE CONTROL RELAY	B-9	-O
FEEDS RIVET #13 FROM (3) H RIVETS ON SCORE MOTOR	B-9	B-6
TO STRIKE-SPARE ADVANCE RELAY IN ALL GAMES EXCEPT "STRIKES 90"	B-10	G-O
	B-10	BLU-B
FEED TO RIVETS #18 & #19	B-5	BR-B
TRIPS 11th FRAME RELAY IN FRAME (II) ELEVEN	B-5	B-R
TRIPS GAME OVER RELAY IN FRAME (II) ELEVEN	B-5	O-B
FEEDS RIVET #21 FROM 1st POSITION CAM SWITCH ON SCORE MOTOR	A-4	W-O
IN CIRCUIT TO FLASH MOTOR ON 2nd SHOT	A-4	BLU-W
TO 10-90 SCORE RELAY IN "STRIKES 90" OR "REGULATION"	B-7	-G
FEEDS RIVET #22 IN "REGULATION" GAME	B-7	R-G
FEEDS RIVET #22 IN "STRIKES 90" AND RIVET #25	A-7	O-W
IN CIRCUIT TO 100'S SCORE RELAY - IN 11th FRAME OF "BONUS GAME"	A-7	BR-W
IN CIRCUIT TO STRIKE-SPARE RESET RELAY, IN "REGULATION", "DUAL", & "FLASH" GAMES.	B-9	R-W
FEEDS RIVETS #26 IN "DUAL" & "FLASH" GAME FROM (3) KI RIVETS ON SCORE MOTOR DISC.	B-9	G-R
FEEDS RIVET #26 IN "REGULATION" GAME	B-9	BR-Y



## GAME SELECTION DISC

THE FUNCTION OF THIS UNIT IS TO SELECT THE CIRCUITS NEEDED FOR THE PARTICULAR GAME WHICH THE BOWLER DECIDES TO PLAY. THIS UNIT ALWAYS ADVANCES TO "REGULATION" WHEN MACHINE IS RESET. IT ALSO ADVANCES EACH TIME THE BUTTON ON THE COIN BOX HOUSING IS DEPRESSED.  
(Before first puck is thrown)

# FRAME CONTROL S.U. UNIT

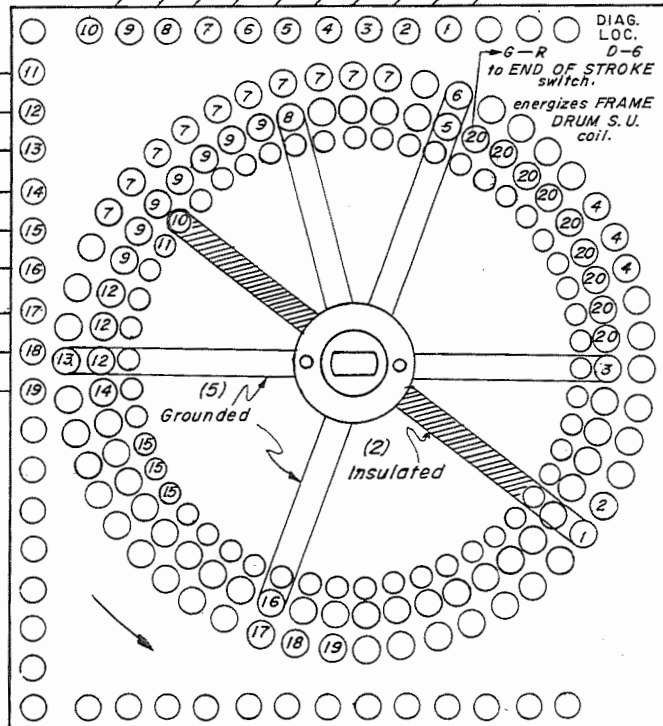
THIS UNIT ADVANCES ONE STEP EACH TIME THE LAST PLAYER COMPLETES HIS TURN. IT RESETS TO ZERO POSITION WHEN START RELAY IS TRIPPED, DURING RESET CYCLE.

*View looking at WIPER FINGERS side  
with wiper in ZERO position.*

- | DIAGRAM LOCATION | DESCRIPTION  |
|------------------|--|
| D-12             | IN CIRCUIT TO GAME SELECTION S.U. COIL                                       |
| D-8              | TO "FRAMES 8 THRU 10 SCORE" LITES IN 'BONUS' GAME                            |
| C-7              | IN CIRCUIT TO 5th PL. STRIKE-SPARE UNIT RESET COIL                           |
| D-9              | TO "BONUS FRAME COLLECTS" LITE IN 'BONUS' GAME                               |
| A-5              | IN CIRCUIT TO 100's SCORE RELAY IN 'BONUS' GAME                              |
| C-7              | IN CIRCUIT TO 6th PL. STRIKE-SPARE UNIT RESET COIL                           |
| C-11             | ENERGIZES EXTRA SHOTS S.U. THRU SWITCH ON STRIKE-SPARE ADVANCE RELAY         |
| A-5              | TRIPS GAME OVER RELAY IN ALL GAMES EXCEPT 'BONUS'. ALSO TRIPS 11th FRAME RE. |
| A-5              | TRIPS GAME OVER RELAY IN 'BONUS' GAME  |

DIAGRAM LOCATION

- |      |       |      |
|------|-------|------|
| D-12 | - O   | (11) |
| D-8  | W-R   | (12) |
| C-7  | R-W   | (13) |
| D-9  | Y-R   | (14) |
| A-5  | G-W   | (15) |
| C-7  | R-BLU | (16) |
| C-11 | BR-W  | (17) |
| A-5  | BR-B  | (18) |
| A-5  | O-B   | (19) |

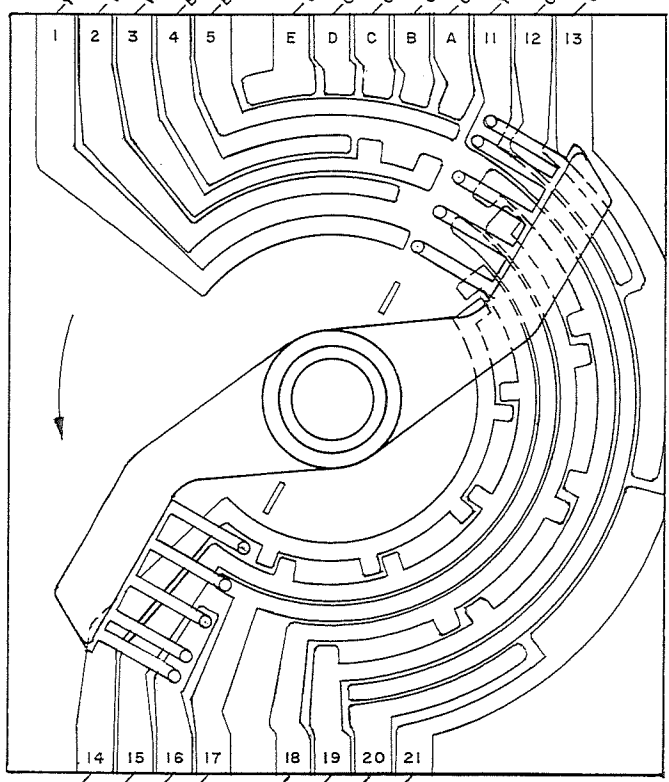


- | DIAGRAM LOCATION | DESCRIPTION   |
|------------------|---|
| B-W              | ENERGIZES EXTRA SHOTS RESET RELAY THRU 'V' & 'Q' RIVETS ON SCORE MOTOR DISC |
| D-9              | TO "FRAMES 1 THRU 7 SCORE" LITE, IN 'BONUS' GAME                            |
| D-8              | IN CIRCUIT TO 4th PL. STRIKE-SPARE UNIT RESET COIL                          |
| C-7              | TRIPS START RELAY, THRU SWITCH ON-COIN RELAY                                |
| D-13             | IN CIRCUIT TO 3rd PL. STRIKE-SPARE UNIT RESET COIL                          |
| C-7              | IN CIRCUIT TO 10th FRAME LITE, THRU GAME SELECTION DISC                     |
| D-7              | IN CIRCUIT TO 100's SCORE RELAY IN 'BONUS' GAME                             |
| A-5              | IN CIRCUIT TO 2nd PL. STRIKE-SPARE UNIT RESET COIL                          |
| C-7              | IN CIRCUIT TO 6th PL. STRIKE-SPARE UNIT RESET COIL                          |
| D-12             | 6 VOLT & 50 VOLT COMMON   |

DIAGRAM LOCATION  
 D-11  
 D-11  
 D-11  
 D-10  
 A-8  
 A-8  
 D-10  
 E-10  
 E-10

6 VOLT FEED TO LUGS #2,3, & 4  
 1st STRIKE LITE  
 SPARE LITE  
 2nd STRIKE LITE  
 FEED FROM PLAYER UP DISC  
 TO A-B-C-D-E POSITIONS  
 IN CIRCUITS TO OPERATE THE  
 RESET RELAY AND THE SCORE  
 CONTROL RELAY THRU  
 A-B-C-D-E RIVETS ON SCORE  
 MOTOR DISC.  
 THESE SAME WIRES ALSO GO TO  
 A-B-C-D-E POSITIONS OF THE  
 OTHER FIVE STRIKE-SPARE  
 DISCS.

FEED FROM PLAYER UP DISC  
 TO LUGS # 12, 13, 20, & 21  
 3000  
 4000  
 BONUS SCORE  
 LITES

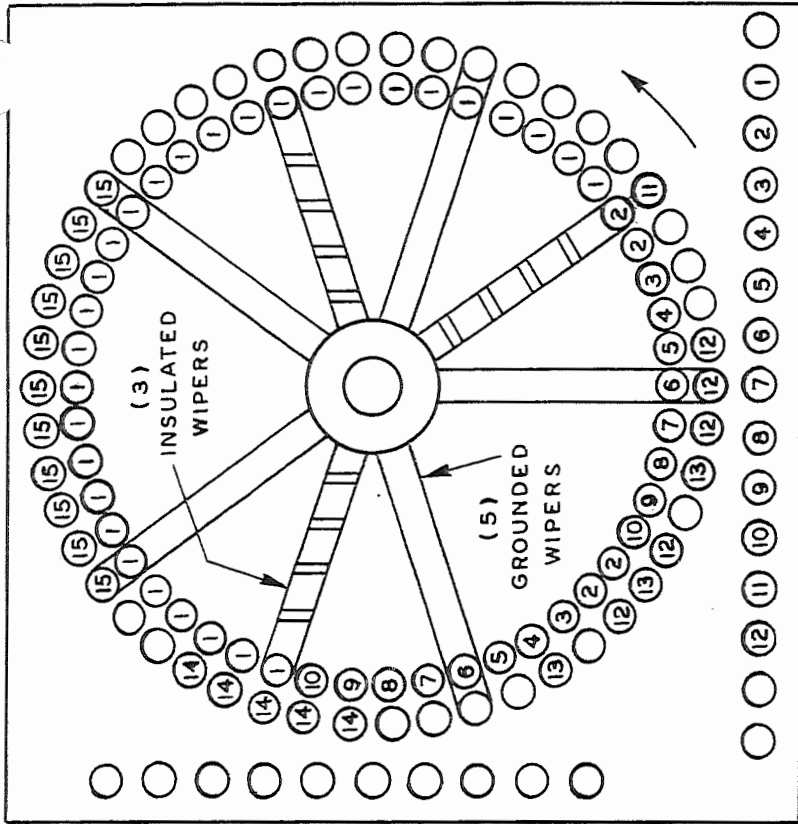


## STRIKE-SPARE UNIT DISC (1st Player)

DIAGRAM LOCATION  
 E-9  
 E-9  
 E-9  
 D-9  
 E-9  
 E-9  
 E-10  
 E-10

BONUS SCORE LITES  
 (200 400 0  
 FEED FROM PLAYER UP DISC  
 TO LUGS #14, 15, 16, 18, AND 19.)  
 BONUS SCORE LITES  
 (600 800 1000 2000)

THERE ARE (6) SIX STRIKE-SPARE UNIT DISCS, ONE FOR EACH PLAYER. THE DISCS ARE IDENTICAL. THE WIRE COLORS FOR THE STRIKE AND SPARE LITES, TO THE OTHER FIVE STRIKE-SPARE DISCS, ARE SHOWN BETWEEN E-11 AND E-14. WIRES THAT FEED THE BONUS LITES, LUGS #11 AND #17, ARE SHOWN AT D-9 AND D-10. WIRE COLORS TO LUG #5, WHICH FEED THE A-B-C-D-E POSITIONS ARE SHOWN AT A-9.



WIRE CONNECTS TO	IN CIRCUIT TO	DIAG. LOC.
SWITCH ON FLASH RELAY	100'S SCORE RE.	A-7
SWITCH ON BONUS RE. & M-1 RIVETS ON SCORE MOTOR DISC	100'S SCORE RE.	A-7
SWITCH ON FLASH RELAY	100'S SCORE RE.	A-7

O-BLU  
R-W  
W-R

VIEW LOOKING AT WIPER FINGER SIDE

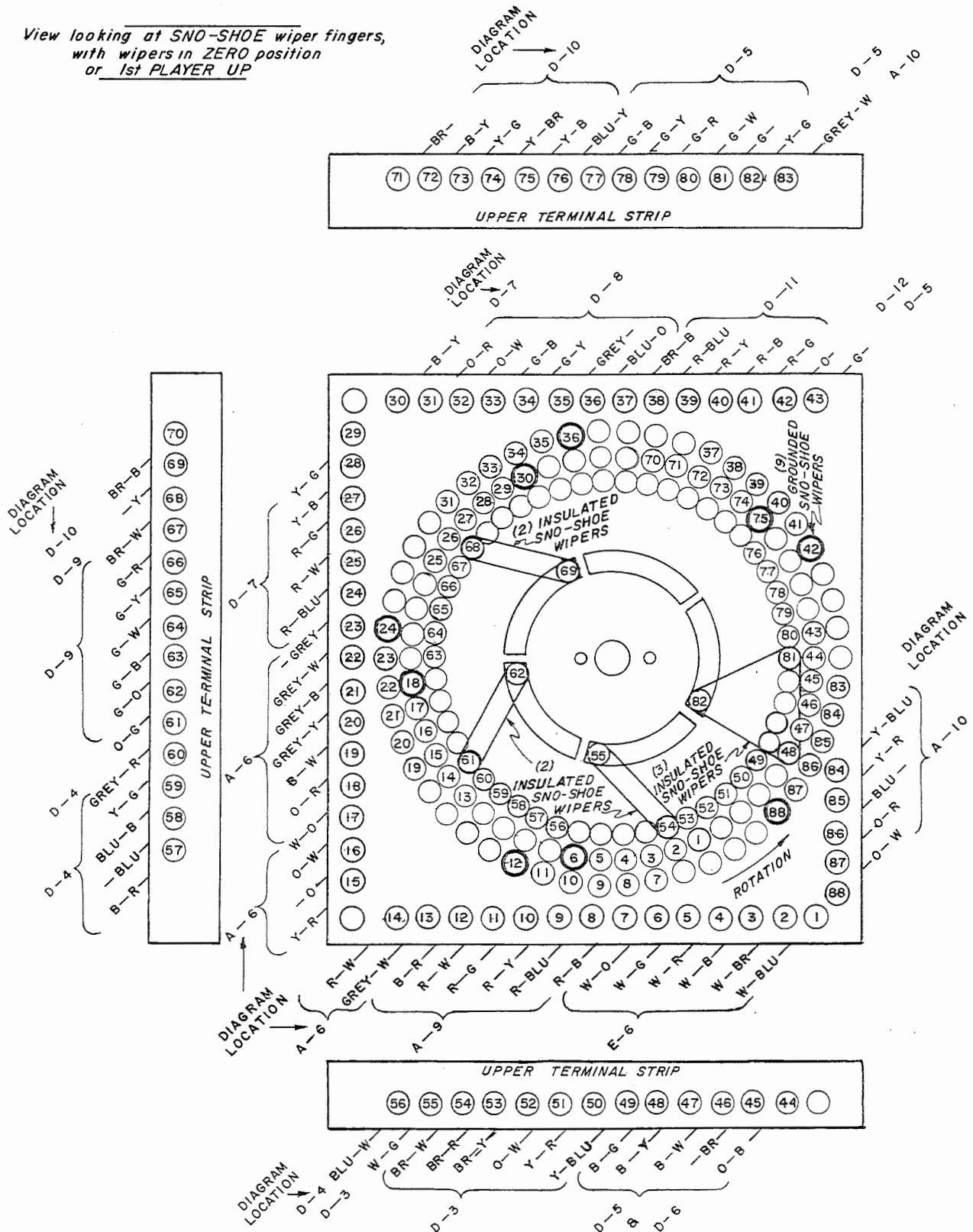
DIAG. LOC.	IN CIRCUIT TO	WIRE CONNECTS TO
	6 VOLT & 50 VOLT COMMON	
Y -		
BR -	E-5	300-100
BR - R	E-5	400-200
BR - Y	E-5	500-300
BR - W	E-5	600-400
BR - B	E-5	800-500
Y - BR	E-5	600-400
Y - R	E-5	500-300
Y - G	E-5	400-200
Y - B	E-5	300-100
R - BR	A-7	SW. ON STRIKE RELAY
O - W	A-7	100'S SCORE RE. P-1 RIVET ON SCORE MTR. DISC

## FLASH MOTOR DISC

THE MAIN FUNCTION OF THE FLASH MOTOR IS TO COMPLETE THE PROPER CIRCUITS TO ENERGIZE THE 100'S SCORE RELAY WHEN A STRIKE OR SPARE IS MADE. THIS MOTOR OPERATES ONLY IN A "FLASH" OR "DUAL FLASH" GAME.

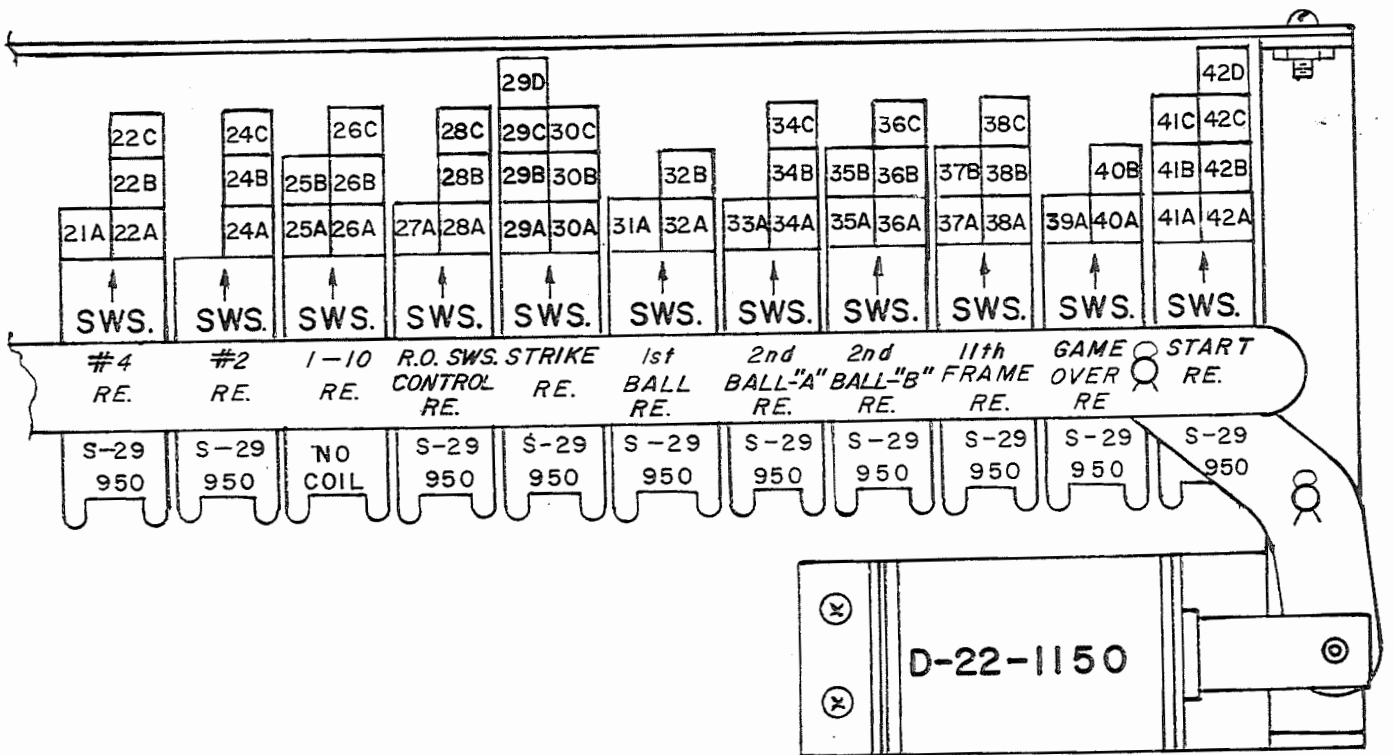
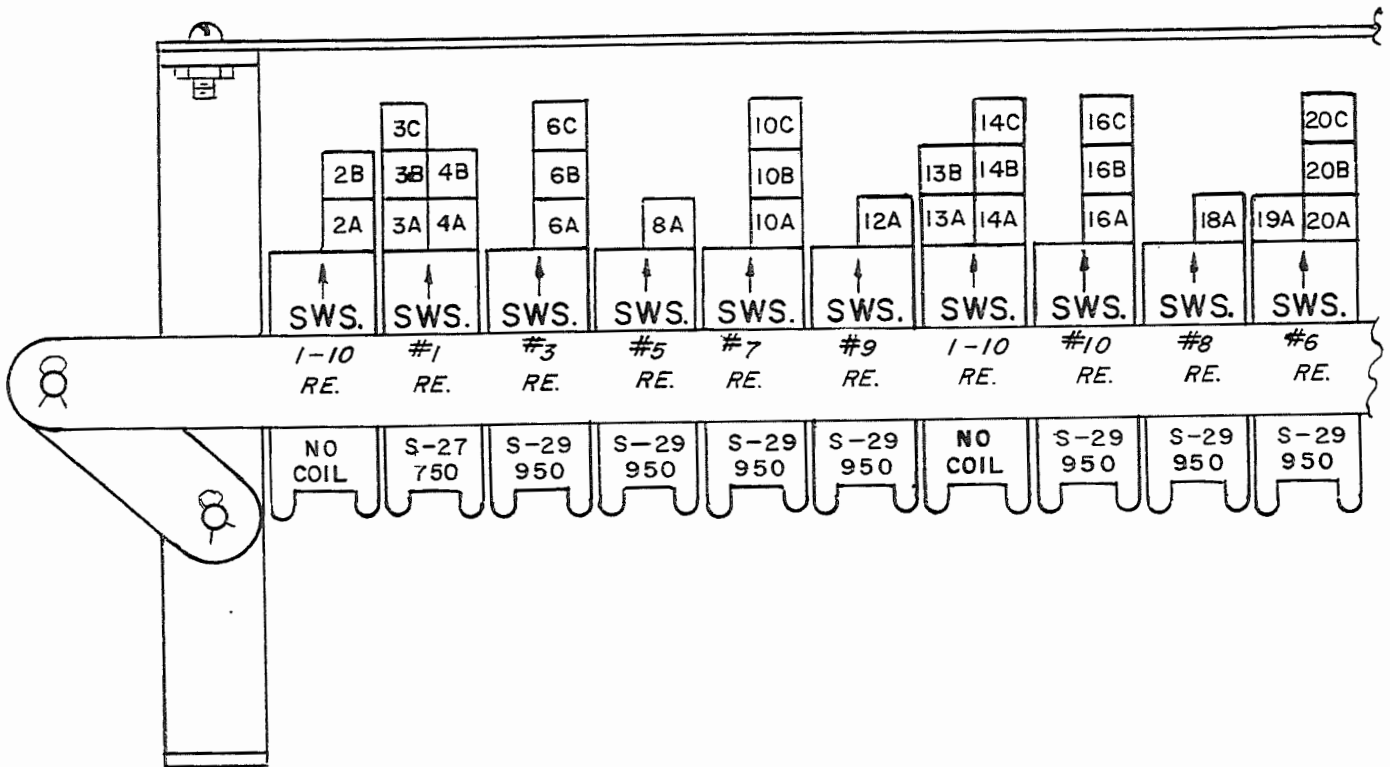
# PLAYER UP UNIT DISC

View looking at SNO-SHOE wiper fingers,  
with wipers in ZERO position  
or 1st PLAYER UP



# PLAYER UP UNIT DISC

LUG		LUG		
1	<i>TO PLAYER UP LITES</i>	43	<i>TO 1000 DRUM S.U. COILS, THRU 9th POSITION SWITCHES ON 100's DRUM UNITS.</i>	
2				
3				
4				
5				
6				
7	<i>IN CIRCUITS TO SCORE CONTROL RELAY, STRIKE-SPARE RESET RELAY, &amp; 10-90 SCORE RELAY IN "REGULATION" GAME. THESE WIRES CONNECT TO THEIR RESPECTIVE STRIKE-SPARE UNIT DISCS.</i>	49	<i>THESE WIRES CONNECT TO 1-9 DRUM S. U. COILS.</i>	
8				
9				
10				
11				
12				
13	<i>IN CIRCUIT TO 100's SCORE RELAY THRU 9th POSITION SWITCHES ON 10-90 DRUM UNITS.</i>	55	<i>FEEDS 49 to 54 FROM SW. ON 1-9 SCORE RE.</i>	
14		56	<i>THESE WIRES CONNECT TO 10-90 DRUM S. U. COILS.</i>	
15		57		
16		58		
17		59		
18		60		
19	<i>IN CIRCUIT TO 10-90 SCORE RELAY THRU 9th POSITION SWITCHES ON 1-9 DRUM UNITS.</i>	61		<i>THESE WIRES CONNECT TO THE (6) STRIKE-SPARE UNIT DISCS, TO LITE THE 0, 200, 400, 600, AND 800 BONUS SCORE LITES.</i>
20		62	<i>FEEDS 56 to 61 FROM SW. ON 10-90 SCORE RE.</i>	
21		63		
22		64		
23		65		
24		66		
25	<i>TO STRIKE-SPARE UNIT RESET COILS THRU ZERO POSITION SWITCHES ON THOSE UNITS.</i>	67	<i>THESE WIRES CONNECT TO THE (6) STRIKE-SPARE UNIT DISCS, TO LITE THE 1000, 2000, 3000, AND 4000 BONUS SCORE LITES.</i>	
26		68		
27		69		<i>FEEDS RIVETS 63 to 68</i>
28		70		
29		71		
30		72		
31	<i>IN CIRCUIT TO STRIKE-SPARE S.U. COILS.</i>	73	<i>THESE WIRES CONNECT TO THE 100's DRUM UNIT COILS.</i>	
32		74		
33		75		
34		76		
35		77		
36		78		
37	<i>IN CIRCUIT TO ENERGIZE PLAYER RESET RELAY.</i>	79	<i>FEEDS 43 to 48, And 76 to 81 Thru SW. on 100's Re.</i>	
38		80		
39		81		
40		82		
41		83		
42		<i>IN CIRCUIT TO ENERGIZE GAME SELECTION S.U. COIL.</i>		84
	85			
	86			
	87			
	88			
	88			



D-22-1150

RELAY BANK SWS.

## RELAY BANK SWS.

RELAY	SW.	WIRE COLORS	DIAGRAM LOCATION	TYPE	SWITCH OPERATION:
<i>1-10</i> <i>RELAY</i> <i>(No Coil)</i>	2A	R-B G-B	C-12	N.O.	Trips Strike Relay thru D1 and M rivets on Score Motor disc.
	2B	O-W BR-Y	B-9	N.C.	In circuit to Strike-Spare Reset Relay from K rivets on Score Motor disc. - in "Regulation" game.
<i># 1</i> <i>RELAY</i>	3A	J B-O	A-14	N.O.	In circuit to 6 Pin coil, on second shot, when player has a 2-4-6 leave.
	3B	BR-W Y-O	C-12	N.O.	Trips R.O. Switches Control Relay-thru Score Motor disc. or switch on 2nd Ball "B" Relay.
	3C	Y-BR R-O	A-4	N.C.	Breaks circuit to Flash Motor & Flash Motor Release Coil in "Dual Flash" or "Flash" games.
	4A	J G G-Y-W	A-12	M&B	Trips #1 Relay thru A or B rollover switch and energizes 1 Pin coil.
4B	J J	A-13	N.O.	In circuit to 4 Pin Coil, on second shot, when player has a 3-4-6 leave.	
<i># 3</i> <i>RELAY</i>	6A	J O-G BLU-R	A-11	M&B	In circuit to trips #3 Relay-also to impulse 1-9 Score Relay thru Score Motor disc.
	6B	Gray-W J	B-13	N.C. →	In series with Switch 19A on #6 Relay.
	6C	R-B J	A-14	N.C.	In circuit to 10 Pin Coil thru 'T' rollover switch.
<i># 5</i> <i>RELAY</i>	8A	J R-Y BLU-W	A-11	M&B ~	In circuit to trip #5 Relay-also to impulse 1-9 Score Relay thru Score Motor disc.
<i># 7</i> <i>RELAY</i>	10A	J B-G BR-W	A-12	M&B	In circuit to trip #7 Relay-also to impulse 1-9 Score Relay thru Score Motor disc.
	10B	J J	A-13	N.C.	In circuit to 7 Pin Coil, on second shot, when player has a 2-7 leave.
	10C	Y-R J	B-14	N.C.	In circuit to 10 Pin Coil, on second shot, when player has a 7-10 leave.
<i># 9</i> <i>RELAY</i>	12A	J BLU-B BR	A-12	M&B	In circuit to trip #9 Relay-also to impulse 1-9 Score Relay thru Score Motor disc.



## RELAY BANK SWS.

RELAY	SW.	WIRE COLORS	DIAGRAM LOCATION	TYPE	SWITCH OPERATION:
<i>1-10</i>  <i>RELAY</i>	13A	W-G BR-B	C-12	N.O.	In Bell Coil circuit during "Regulation" game.
	13B	O-W BLU-BR	A-6	N.O.	In circuit to 10-90 Score Relay in "Strikes 90", and 100's Score Relay in 11th frame of "Bonus" game.
	14A	Y-BLU R-G Y-R	B-8	M&B	Circuit to 10-90 Score Relay from 3 "G" or 5 "J" rivets in "Regulation" game.
	14B	Y GRAY- BR	D-9	N.O.	Runs Score Motor thru switch on Score Motor Relay.
	14C	G-Y B-W	C-9	N.C.	Breaks circuit to Extra Shots Reset Relay in 10th Frame.
<i>#10</i>  <i>RELAY</i>	16A	J O-B BR-R	A-12	M&B	In circuit to trip #10 Relay-also to impulse 1-9 Score Relay thru Score Motor disc.
	16B	J Y-B	B-14	N.C.	In circuit to 7 Pin Coil, on second shot, when player has a 7-10 leave.
	16C	BLU-Y J	A-13	N.C.	In circuit to 10 Pin Coil, on second shot, when player has a 3-10 leave.
<i>#8</i>  <i>RELAY</i>	18A	J B-Y BR-Y	A-12	M&B	In circuit to trip #8 Relay-also to pulse 1-9 Score Relay thru Score Motor disc.
<i>#6</i>  <i>RELAY</i>	19A	J J J	A-13	M&B	In series with Switch 4 B on #1 Relay, or with Switch 16 C on #10 Relay.
	20A	J R-BLU BR-B	A-12	M&B	In circuit to trip #6 Relay-also to pulse 1-9 Score Relay thru Score Motor disc.
	20B	BLU-R J	A-14	N.C.	In series with switch 3 A on #1 Relay.
	20C	O-R J	B-14	N.C.	To 10 Pin Coil from 'K' or 'L' rollover switch.
<i>#4</i>  <i>RELAY</i>	21A	B-O J J	A-13	M&B	In series with switch 3 A on #1 Relay, or with switch 10 B on #7 Relay.
	22A	J O-W B-Y	A-11	M&B	In circuit to trip #4 Relay-also to pulse 1-9 Score Relay thru Score Motor disc.
	22B	J Y-G	A-13	N.C.	In series with switch 4 B on #1 Relay.

## RELAY BANK SWS.

RELAY	SW.	WIRE COLORS	DIAGRAM LOCATION	TYPE	SWITCH OPERATION:
<b># 4</b> <i>RELAY</i>	22C	G-W J	B-14	N.C.	Energizes 7 Pin Coil when 'I' or 'J' rollover switch is made.
<b># 2</b> <i>RELAY</i>	24A	J O-R BLU-Y	A-11	M&B	In circuit to trip #2 Relay-also to pulse 1-9 Score Relay thru Score Motor disc.
	24B	J R-W	A-14	N.C.	Energizes 7 Pin Coil thru 'W' rollover switch.
	24C	B-R J	B-13	N.C.	In series with switch 21 A on #4 Relay.
<b>1-10</b> <i>RELAY</i>	25A	GRAY-R J	B-10	N.O.	Energizes Bonus Relay thru switch on 11th Frame Relay.
	25B	J J	B-5	N.O.	To 100's Score Relay in "Bonus" game.
	26A	G-Y J G-O	B-10	M&B	Breaks circuit to 1-9 Score Relay and Score Control Relay and makes in circuit to Strike-Spare Advance Relay.
	26B	BLU-Y W-R	B-7	N.O.	To 100's Score Relay in "Flash" or "Dual Flash" games.
	26C	B-BLU Y-BF	B-4	N.C.	Breaks circuit to Flash Motor and Flash Motor Release Coil.
<b>R.O. SWS.</b> <i>CONTROL</i> <i>RELAY</i>	27A	BLU J	A-11	N.O.	Pulses 1-9 Score Relay thru Score Motor disc. rivets 1 and X.
	28A	R-G J	B-14	N.O.	In series with switch 10 C on #7 Relay, or with Switch 16 B on #10 Relay.
	28B	Y-O J	C-12	N.C.	Breaks circuit to this Relay.
	28C	BR G	B-13	N.C.	Breaks circuits to rollover switches in Strike Zones.
<b>STRIKE</b> <i>RELAY</i>	29A	GRAY-B BR-Y	A-4	N.O.	Energizes Repeat Strike Relay in "Strike 90" game.
	29B	G-R BLU-B	A-5	N.O.	Pulses 100's Score Relay from E 1 rivet on Score Motor Disc.-in 8th, 9th, & 10th frames of "Bonus" game.
	29C	G-W W-G	A-5	N.O.	Pulses 100's Score Relay from H 1 rivet on Score Motor disc.-in "Bonus" game.
	29D	O-BLU GRAY-G	A-8	N.O.	Pulses 100's Score Relay from (2) V 1 rivets on Score Motor Disc.-in "Flash" games.

## RELAY BANK SWS.

RELAY	SW.	WIRE COLORS	DIAGRAM LOCATION	TYPE	SWITCH OPERATION:
<b>STRIKE RELAY</b>	30A	BLU-R J	C-12	N.C.	Breaks circuit to this Relay.
	30B	BLU-BR R-Y	A-6	N.O.	In series with switch 13 B on 1-10 Relay.
	30C	O-W R-BR	A-7	N.O.	Pulses 100's Score Relay from P 1 rivet on Score Motor Disc.-in "Flash" games.
<b>1st BALL RELAY</b>	31A	GRAY-Y O-B	C-10	N.O.	Runs Score Motor to 1st Position.
	32A	G-O J	A-4	N.C.	Breaks circuit to this relay.
	32B	G-B R-O	A-4	N.C.	In series with switch 3 C on #1 Relay.
<b>2nd BALL-"A" RELAY</b>	33A	O-R G	A-8	N.O.	Pulses Strike-Spare Reset Relay from (4) T 1 rivets on Score Motor disc.- in 11th frame of Bonus game.
	34A	J Y Y-R	A-4 D-13	M&B	Breaks circuit to this relay-also completes circuit to 2nd Ball "B" Relay thru 1st position Score Motor cam switch.
	34B	BLU-W J	A-4	N.C.	Breaks circuit to Flash Motor and Flash Motor Release Coil in "Dual Flash" game.
	34C	BR G-Y-W	B-12	N.C.	Breaks circuit to all rollover switches.
<b>2nd BALL-"B" RELAY</b>	35A	O-G G-Y	D-9	N.O.	In circuit to Extra Shots Reset Relay, in 10th Frame, when player gets a strike followed by a blow.
	35B	BR-Y Y-G	B-9	N.O.	Pulses Strike-Spare Reset Relay from P rivet on Score Motor Disc.-in "Regulation" game.
	36A	J J	D-10	N.O.	Runs Score Motor.
	36B	J BR-W	C-11	N.O.	In series with Switch 3 B on #1 Relay.
	36C	W-BR J	C-13	N.C.	Breaks circuit to this relay.

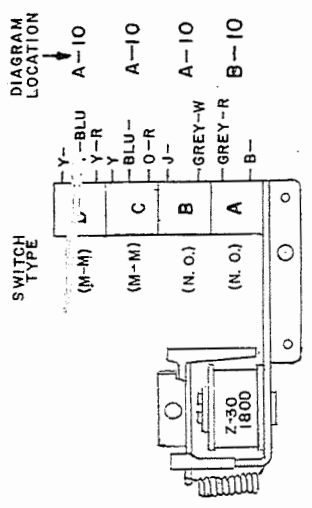
## RELAY BANK SWS.

RELAY	SW.	WIRE COLORS	DIAGRAM LOCATION	TYPE	SWITCH OPERATION:
<i>11th</i> <b>FRAME RELAY</b>	37A	J J J	B-10	M&B	Breaks circuit to Strike-Spare Advance Relay and makes in series with switch 25 A on 1-10 Relay.
	37B	W-G J	D-8	N.C.	To Frame Drum Lite.
	38A	B-R J	B-5	N.C.	Breaks circuit to this relay.
	38B	J B-W	B-5	N.C.	Breaks circuit to 100's Score Relay in "Bonus" game.
	38C	W-R J	D-8	N.C.	To 'Advance Bonus' lite.
<b>GAME OVER RELAY</b>	39A	J J	B-3	N.C.	Breaks power line (Black) to all scoring relays and all rollover switches.
	40A	R-Y-W W Y-BLU	E-6	M&B	Makes Game Over lite, and breaks circuit from 6 V (White) line.
	40B	J J	C-13	N.O.	Trips Start Relay when Coin Relay is energized.
<b>START RELAY</b>	41A	J B BR-W	B-3	M&B	In series with Switch 39A on Game Over Relay-also in circuit to "A", "B", "C" and Bonus Reset Relays during reset cycle.
	41B	G-O Y	D-10	N.O.	Energizes Reset Coils on Frame Control and Coin Units, thru 2nd position Score Motor cam switch.
	41C	G-Y-W B	B-13	N.C.	Breaks circuit to Coin Relay, Coin Lockout Coil, and 2nd Ball "B" Relay.
	42A	G-R O Y	C-8	M&B	To Player Up unit Reset Coil.
	42B	GRAY-B Y	D-9	N.O.	Runs Score Motor.
	42C	J J	A-8	N.O.	Pulses Strike-Spare Reset Relay from (4) T 1 rivets on Score Motor disc.
	42D	BR-R BLU-W	C-5	N.C.	Prevents feedback to 1st Player 1000 Drum S.U. during reset cycle.

# A. C. RELAYS & SWITCHES

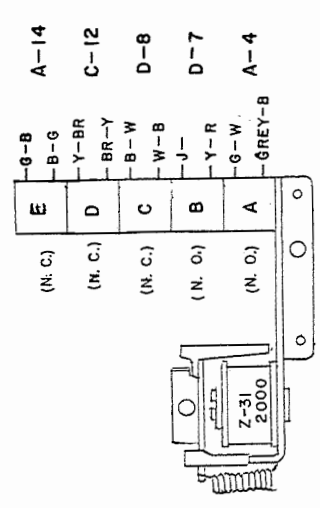
## BONUS RESET RELAY

IS ENERGIZED DURING THE RESET CYCLE BY A SWITCH ON THE START RELAY.



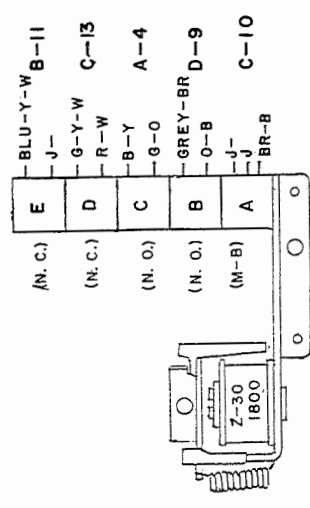
## REPEAT STRIKE RELAY

IS ENERGIZED BY A SWITCH ON THE STRIKE RELAY IN STRIKE-90 GAME ONLY.



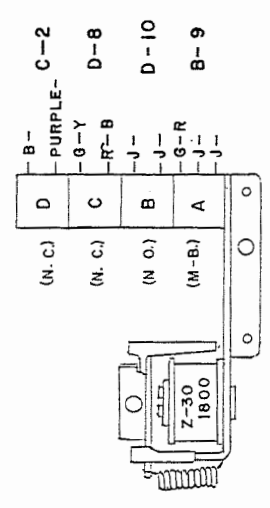
## SCORE MOTOR RELAY

IS ENERGIZED WHENEVER THE SCORE MOTOR IS RUNNING.



## SCORE CONTROL RELAY

IS ENERGIZED THRU THE "H" RIVETS ON SCORE MOTOR DISC., WHEN A PLAYER IS HOLDING A SPARE OR TWO STRIKES AND GETS LESS THAN 10 PINS ON HIS 1ST SHOT. ALSO WHEN A STRIKE IS FOLLOWED BY A BLOW. THIS RELAY OPERATES ONLY IN A "REGULATION" GAME.



## OPERATION

ENERGIZE BONUS RELAY (DURING RESET CYCLE) THRU ZERO BREAK SWITCHES ON 2ND, 3RD, 4TH, 5TH & 6TH PLAYER STRIKE-SPARE UNITS.

IN SERIES WITH ABOVE SWITCHES.

BREAKS "EASY STRIKE" CIRCUIT IN "STRIKES 90" GAME.

BREAKS CIRCUIT TO GAME SELECTION S.U. COIL.

BREAKS CIRCUIT TO EXTRA SHOTS RESET RE.

TO 'BOWL AGAIN' LITE.

HOLD CIRCUIT TO THIS RE., THRU CAM SW. ON 1ST POSITION OF SCORE MOTOR.

PREVENTS #2 TO #10 RELAYS FROM TRIPPING WHILE SCORE MOTOR CYCLES.

BREAKS CIRCUIT TO COIN RELAY, COIN LOCKOUT COIL & 2ND BALL 'B' RE.

TRIPS 2ND BALL 'A' RELAY, THRU SWITCH ON REAR ROLL-OVER RELAY.

RUNS SCORE MOTOR THRU SWITCH ON 1-10 RELAY.

IN CIRCUIT TO ROLL-OVER MOTOR RE. - ALSO IN HOLD CIRCUIT TO SCORE MOTOR RELAY.

BREAKS CIRCUIT TO RELAY BANK RESET COIL.

IN SERIES WITH SWITCH C ON REPEAT STRIKE RELAY.

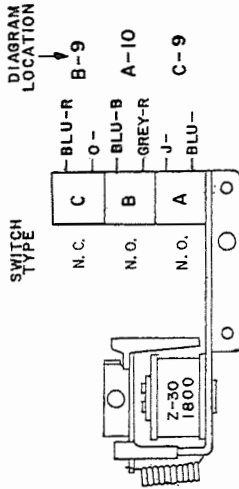
RUNS SCORE MOTOR THRU SWITCH ON 1ST BALL RELAY.

IN CIRCUIT TO PIN RESET RELAY - ALSO HOLD CIRCUIT TO THIS RELAY.

# A. C. RELAYS & SWITCHES

## EXTRA SHOTS RESET RELAY

IS ENERGIZED BY THE "Q" AND "M" RIVETS ON SCORE MOTOR DISC., THRU CIRCUITS ORIGINATING IN THE EXTRA SHOTS UNIT DISC.



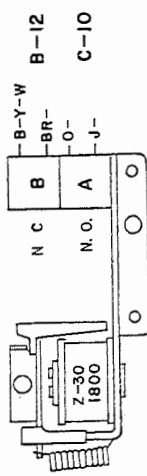
## OPERATION

BREAKS CIRCUIT TO SCORE CONTROL RELAY.

ENERGIZES PIN RESET RE. THRU ZERO POSITION CAM SW. ON SCORE MOTOR. IN HOLD CIRCUIT TO THIS RELAY-ALSO CONTROLS POWER TO 3RD POSITION CAM SWITCH, B-R AND BLU.

## ROLL OVER MOTOR RELAY

IS ENERGIZED, ON THE FIRST SHOT, BY THE SAME CIRCUIT THAT RUNS THE SCORE MOTOR. IT IS THEN HELD IN UNTIL A CAM SWITCH ON 1ST POSITION OF SCORE MOTOR OPENS.

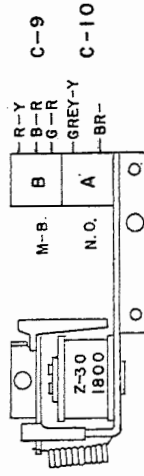


BREAKS CIRCUIT TO ROLL-OVER SWITCHES AS PUCK RETURNS TO PLAYER (ON 1ST SHOT).

HOLD CIRCUIT TO THIS RELAY THRU 1ST POSITION CAM SWITCH ON SCORE MOTOR.

## PLAYER RESET RELAY

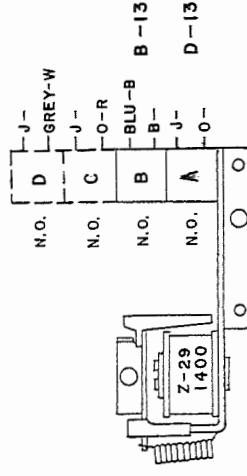
IS ENERGIZED BY THE "M" AND "P" RIVETS OF SCORE MOTOR DISC., AND THE COIN DISC. WHEN MORE THAN ONE PERSON IS PLAYING, THE CIRCUIT ALSO INCLUDES THE PLAYER UP UNIT DISC.



ENERGIZES PLAYER UP UNIT STEP UP COIL OR PLAYER UP UNIT RESET & FRAME CONTROL UNIT STEP UP COILS (THRU SW. 'A' ON EXTRA SHOTS RESET RE.) IN HOLD CIRCUIT TO THIS RELAY.

## COIN RELAY

IS PULSED BY THE DROP CHUTE SWITCH. THE FRONT DOOR SLAM SWITCH (NORMALLY CLOSED) IS ALSO IN THIS CIRCUIT.



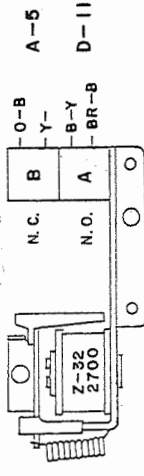
USED ONLY IN MULTIPLE COIN CIRCUITS.

TRIPS START RELAY AND PULSES COIN METER.

ENERGIZES COIN STEP UP COIL.

## LOCK RELAY

IS ENERGIZED BY A SWITCH ON THE "A" RESET RELAY.



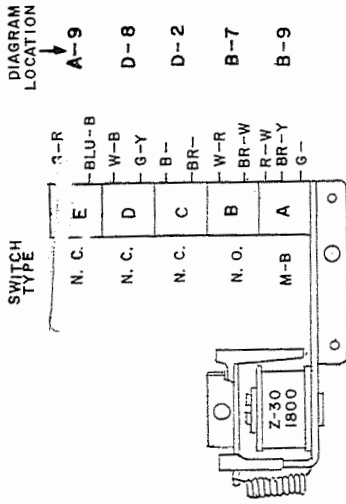
TRIPS GAME OVER RELAY.

HOLD CIRCUIT TO THIS RELAY THRU BACK BOX TILT SWITCH.

# A. C. RELAYS & SWITCHES

## BONUS RELAY

IS ENERGIZED, ON THE RESET CYCLE, BY SWITCHES ON THE BONUS RESET RELAY THRU THE ZERO BREAK SWITCHES ON THE STRIKE-SPARE S.J. UNITS. IN THE 11TH FRAME, DURING A "BONUS" GAME, IT IS ENERGIZED WHEN A STRIKE OR SPARE IS MADE.



## OPERATION

BREAKS CIRCUIT TO SCORE CONTROL RELAY & PIN RESET RELAY.

IN SERIES WITH SWITCH 'C' ON SCORE CONTROL RELAY.

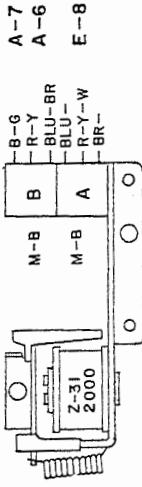
BREAKS 110 V CIRCUIT TO RELAY BANK RESET COIL.

IN CIRCUIT TO 100'S SCORE RELAY IN "BONUS" GAME ONLY.

IN CIRCUIT TO STRIKE-SPARE RESET RELAY.

## BONUS LITE RELAY

IS ENERGIZED THRU THE GAME SELECTION DISC. IN "BONUS" GAME.

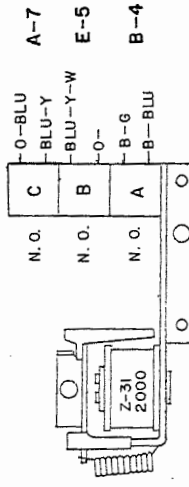


IN CIRCUIT TO 10-90 SCORE RELAY DURING "STRIKES 90" GAME, & 100'S SCORE RELAY IN 11TH FRAME OF "BONUS" GAME.

BREAKS CIRCUIT TO ALL 6 PLAYERS STRIKE & SPARE LITES, & MAKES TO ALL LITES USED IN "BONUS" GAME.

## FLASH RELAY

IS ENERGIZED THRU THE GAME SELECTION DISC. IN "JUMBA" OR "FLASH" GAMES.



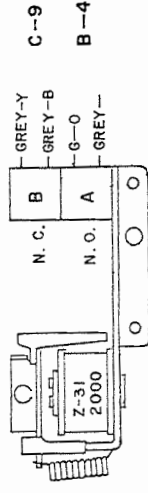
IN CIRCUIT TO 100'S SCORE RELAY IF STRIKE OR SPARE IS MADE.

COMPLETES CIRCUIT TO HOOD & PLAYFIELD FLASHING LITES.

TO FLASH MOTOR AND FLASH MOTOR RELEASE COIL.

## REAR ROLL OVER RELAY

IS ENERGIZED BY ANY OF THE (9) NINE REAR ROLLOVER SWITCHES.



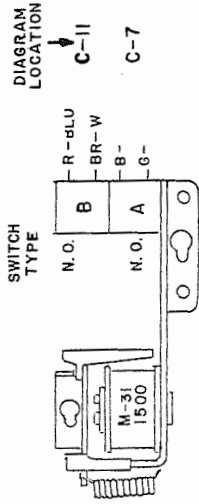
BREAKS CIRCUIT TO SCORE MOTOR.

TRIPS 1ST BALL RELAY AND 2ND BALL "A" RELAY.

# A. C. RELAYS & SWITCHES

## STRIKE-SPARE ADVANCE RELAY

IS PULSED ONCE FOR A SPARE AND TWICE FOR A STRIKE BY THE "P" RIVETS ON SCORE MOTOR DISC. THIS RELAY DOES NOT OPERATE IN "STRIKES 90" GAME.

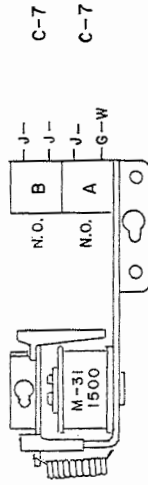


## OPERATION

ENERGIZES EXTRA SHOTS S.U. COIL IN 10TH FRAME.  
ENERGIZES (6) STRIKE-SPARE S.U. COILS THRU PLAYER UP DISC.

## STRIKE-SPARE RESET RELAY

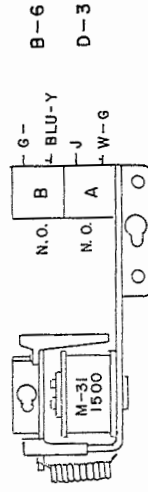
IS PULSED, DURING RESET CYCLE AND 11TH FRAME OF "BONUS" GAME, BY (H) FOUR "TI" AND (L) FOUR "QI" RIVETS ON SCORE MOTOR DISC. IN "REGULATION", IT IS CONTROLLED BY THE POSITION OF THE PLAYERS STRIKE-SPARE UNIT THRU THE "K", "L" AND "P" RIVETS ON SCORE MOTOR.



THESE SWITCHES ARE IN PARALLEL. THEY ENERGIZE THE STRIKE-SPARE UNIT RESET COILS THRU THE CORRESPONDING STRIKE-SPARE S.U. ZERO POSITION SWITCHES.

## 1-9 SCORE RELAY

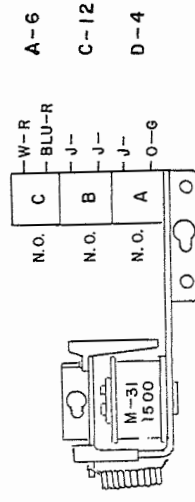
OPERATES WHEN LESS THAN 10 PINS ARE MADE ON TWO SHOTS. IT ALSO OPERATES IN "REGULATION", AFTER THE FIRST SHOT, WHEN PLAYER IS HOLDING A SPARE OR TWO STRIKES AND GETS LESS THAN 10 PINS.



PULSES 10-90 SCORE RE. THRU 9TH POSITION SW. ON 1-9 DRUM UNITS.  
PULSES 1-9 DRUM S.U. COILS THRU THE PLAYER UP DIS.

## 10-90 SCORE RELAY

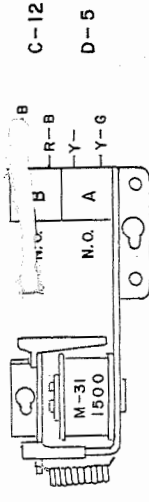
OPERATES, IN "STRIKES 90", BY THE "RI", "AI" AND "BL" RIVETS ON SCORE MOTOR. IT ALSO OPERATES, IN "REGULATION" THRU THE "G" OR "J" RIVETS ON SCORE MOTOR.



PULSES 100'S SCORE RE. THRU 9TH POSITION SW. ON 10-90 DRUM UNITS.  
ENERGIZES BELL COIL.  
PULSES 10-90 DRUM S.U. COILS THRU THE PLAYER UP DISC.

## 100'S SCORE RELAY

OPERATES, IN "BONUS" AND "FLASH", THRU RIVETS ON THE FLASH MOTOR AND SCORE MOTOR DISCS. IT ALSO OPERATES DURING THE "BONUS" GAME.



ENERGIZES BELL COIL.  
PULSES 100'S DRUM S.U. COILS-ALSO 1000 DRUM S.U. COILS THRU 9TH POSITION SWITCHES ON 100'S DRUM UNITS.

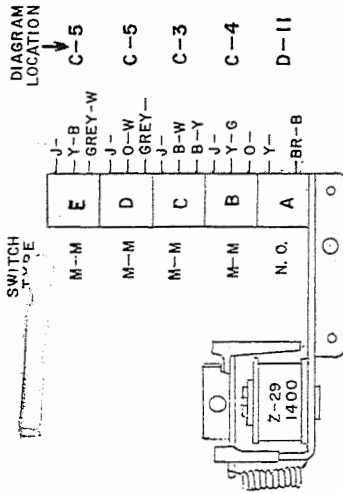


# A. C. RELAYS & SWITCHES

## "A" RESET RELAY

THIS RELAY IS PULSED BY (11) 'W' RIVETS ON SCORE MOTOR DISC. WHEN SWITCH ON START RELAY IS CLOSED.

(DURING RESET CYCLE)



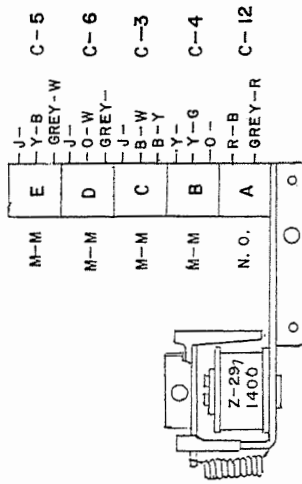
## OPERATION

PULSES 1ST & 2ND PLAYER 100-900 DRUM.  
 PULSES 1ST & 2ND PLAYER 1,000 DRUM UNITS.  
 PULSES 1ST & 2ND PLAYER 1-9 DRUM UNITS.  
 PULSES 1ST & 2ND PLAYER 10-90 DRUM UNITS.  
 ENERGIZES LOCK RELAY.

## "B" RESET RELAY

THIS RELAY IS PULSED BY (11) 'W' RIVETS ON SCORE MOTOR DISC. THRU SW. ON START RELAY.

(DURING RESET CYCLE)

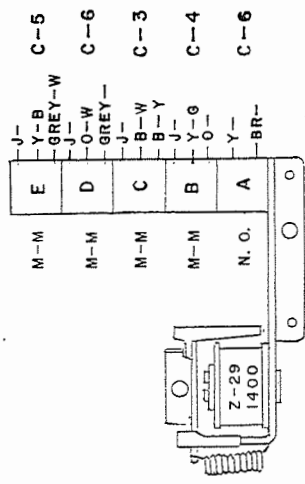


PULSES 3RD & 5TH PLAYER 100-900 DRUM UNITS.  
 PULSES 3RD & 5TH PLAYER 1,000 DRUM UNITS.  
 PULSES 3RD & 5TH PLAYER 1-9 DRUM UNITS.  
 PULSES 3RD & 5TH PLAYER 10-90 DRUM UNITS.  
 ENERGIZES GAME SELECTION S.U. COIL THRU GAME SELECTION DISC.

## "C" RESET RELAY

THIS RELAY IS PULSED BY (11) 'T' RIVETS ON SCORE MOTOR DISC., THRU SW. ON START RELAY.

(DURING RESET CYCLE)



PULSES 4TH & 6TH PLAYER 100-900 DRUM UNITS.  
 PULSES 4TH & 6TH PLAYER 1,000 DRUM UNITS.  
 PULSES 4TH & 6TH PLAYER 1-9 DRUM UNITS.  
 PULSES 4TH & 6TH PLAYER 10-90 DRUM UNITS.  
 PULSES FRAME DRUM S.U.

# CATALOG SUPPLEMENT "D" SHUFFLE ALLEY

## DESCRIPTION OF MISCELLANEOUS PARTS AND PRICE LIST



*Williams*<sup>®</sup> ELECTRONICS, INC.  
SUBSIDIARY OF THE SEEBURG CORPORATION

3401 N. California Ave.  
Phone 267-2240

Chicago, Ill. 60618, U.S.A.  
Cable Address: Wilcoin

## SHUFFLE ALLEY

## PARTS NOT LISTED CHECK IN 1966 CATALOG

PART NO.	DESCRIPTION	PRICE
	We Need Name of Game On All Wood Cabinet Parts	
B-6643	Puck Rebound Rubber & Wood Block Assembly	\$ 30.00
11	Wood Frame For Score Plexiglass	28.00
11	Wood Frame For Hood Plexiglass	18.00
11	Wood Hood	70.00
11	Wood Read Out Insert	4.00
11	Masonite Read Out Insert	4.00
11R	Formica & Wood Rollover Panel 24" x 94 5/8" x 1/2"	86.00
11R	Formica & Wood Rollover Panel 24" x 91 1/2" x 1/2"	86.00
11	Formica & Wood Rollover Complete w/All Parts	130.00
11	Formica Strips For Top Of Side Rails O.S.	4.00
11	Wood Cross Member For T Rebound Rubber	18.00
11	Masonite Wax Catcher	8.00
11	Large Wood Coin Box HSG For Coin Slide Drawer	15.00
11C-223	(W4478) Wood Spacer Block For Coin Slide Drawer	2.60
11	Wood Chime Box	1.60
	Hinge For Hood	.60
	Hinge For Back Door	.60
D-6410	25 1/2" Metal Tubular Leg From Ultra S.A. On	6.00
D-6410-2	27 1/2" Metal Tubular Leg From Up To Astro S.A.	6.00
C-6683	(U4CCU) O.S. Coin Slide Drawer Up To Crest S.A. 1963 Complete Less Rejector	28.00
B-6706	(AST 4629) Cash Box For C-6683	4.30
1C-3998	(ST 4631) Cash Box Cover	.68
1A-4043	(ST 4464) Metal Track For C-6683	.65
	Coin Boxes From Astro S.A. 1963 to & Incl. Orbit 1965	
D-6787-2-SA	(A-6033 S.A.) Coin Box HSG & Door Only	16.00
E-6787-2-SA	(A-6033 S.A.) Coin Box HSG & Door Complete Less Rej	62.00
D-6622-SA	(A-6024 S.A.) Coin Box Door & Hinge Only	4.20
D-6622-1-SA	(A-6024 S.A.) Coin Box Door & Hinge Complete w/Pts.	29.00
B-6789-SA	(AST 6090 S.A.) Cash Box For D-6787-2	2.80
B-6790-SA	(AST 6091 S.A.) Cash Box Cover	1.40
A-6799-SA	(A-6068) Coin Box Funnel	.80
20A-8817	(ST 6061) Hinge For D-6622 Door	.70
	MAMBO S.A. ONLY	
D-6792-SA	(A-6571) Coin Box HSG & Door Only	26.00
E-6792-SA	(A-6571) Coin Box HSG & Door Complete Less Rej.	64.00
D-6622	(A-6024) Coin Box Door & Hinge Only	4.20
B-6395	Cash Box For D-6792	3.90
D-6794	(A-6596) Cash Box Cover	2.60
A-6799-SA	(A-6068) Coin Box Funnel	.80

## SHUFFLE ALLEY

## PARTS NOT LISTED CHECK IN 1966 CATALOG

PART NO.	DESCRIPTION	PRICE
	From Cheetah S.A. To Blazer S.A.	See Page 73 For Door Parts
D-6480-2-SA	Coin Box Housing & Door Only	39.00
E-6480-2-SA	Coin Box Housing & Door Complete Less Rej.	77.00
D-6483-2-SA	Coin Box Door & Hinge Only	6.00
B-6485	Cash Box	4.00
B-6481	Cash Box Cover (Inner Door)	2.20
B-6487	Coin Lockout Wire Form & Bracket	.70
	From Encore S.A. On	
D-6872-SA	Coin Box Housing & Door Only (Charcoal Grey)	16.00
E-6872-SA	Coin Box Housing & Door Complete Less Rej.	48.00
D-6877	Coin Box Door & Hinge Only	6.80
C-6876	Cash Box	3.00
1B-4276	Cash Box Cover	1.60
D-6920	Door Assembly Complete Less Rej.	32.00
B-6393	(A-523-UMC) Hammer Lug Socket Score Insert	.10
B-6394-L	(AST-1598-L) O.S. Rollover See Page 111	.45
B-6394-R	(AST-1598-R) O.S. Rollover See Page 111	.45
B-6394-1-L	Left N.S. Rollover For Thicker Playfield	.45
B-6394-1-R	Right N.S. Rollover For Thicker Playfield	.45
A-6566	Swivel Stay Bracket B.A. & S.A.	1.25
A-6601	Glass Retainer & Rubber	.08
A-6608	Pin Reset Bar Bracket & Arm (Pin Panel)	.40
C-6524	1-10 Trip Bar Assembly	2.70
A-6621	Door Lift Assembly	.40
B-6663-10	O.S.-10 Space Reset Bar Assembly 14 7/16" Long	2.75
B-6663-19	O.S.-19 Space Reset Bar Assembly 24 9/16" Long	2.75
B-6663-20	O.S.-20 Space Reset Bar Assembly 25 11/16" Long	2.75
B-6663-21	O.S.-21 Space Reset Bar Assembly 26 13/16" Long	2.75
1A-3574-1	Lock Cam Used W/Ace Locks	.16
1A-3666	Personalization Strip Mounting Bracket	.15
1A-3675	(ST-3764) Bracket Hood Ring	.15
1B-3695	(ST-419) Brass Switch Spacer	.03
1A-3703	(ST-2386) Coin Trip Wire Stop	.08
1A-3722	Lock Retainer Back Door	.08
1D-3814	(P-6190) Wax Pan	5.10
1A-3841	Fluorescent Socket Mounting Bracket	.30
1B-3846	(ST-6408) O.S. Bottom - T-Rubber Retainer	.60
1B-3847	(ST-6409) O.S. & N.S. Top - T-Rubber Retainer	1.50
1C-3885	N.S. Bottom - T-Rubber Retainer	2.00
1A-3968	Coin Box HSG Brace	2.00
1C-3973-SA	Top Chrome Trim 4 Windows - Specify Coin Denomination	4.60
1C-3973-1-SA	10¢ Top Chrome Trim - 3 Windows	4.60
1C-3973-2-SA	5¢ Top Chrome Trim - 3 Windows	4.60
1C-3973-3-SA	25¢ Top Chrome Trim - 3 Windows	4.60
1C-3973-4-SA	50¢ Top Chrome Trim - 3 Windows	4.60

## SHUFFLE ALLEY

## PARTS NOT LISTED CHECK IN 1966 CATALOG

PART NO.	DESCRIPTION	PRICE
1C-3973-5-SA	Top Chrome Trim No Coin Slot From Cheetah to Altair	4.60
1C-3974-1	Standard - Info Card Cover From Cheetah to Altair	1.00
1C-3974-2	Credit Type Info Card Cover From Cheetah to Altair	1.10
1C-4045	O.S. Small Plastic Info Card Cover	.34
1C-4046-1	(ST-6067-1) Plastic Info Card Cover Credit Type From Astro 1963 to Mambo 1965	.80
1C-4046-3	(ST-6067-3) STD Plastic Info Card Cover Astro to Mambo	.80
1B-4073-1-L	(ST-5748-1-L) O.S. Chrome Stl. Top Side Rail Left	2.50
1B-4073-1-R	(ST-5748-1-R) O.S. Chrome Stl. Top Side Rail Right	2.50
1A-4094	(ST-6127) Green Read Out Plexiglass 5 1/8" x 10 3/4"	1.80
1A-4094-1	(ST-6127-1) Green Read Out Plexiglass 5 1/4" x 14"	2.40
1A-4096	(ST-418-1) Rubber Spacer For 55 Lamp OS Drum Unit	.03
1A-4162	Backglass Bottom Binder	.70
1D-4279	Coin Unit HSG Trim 3 Windows No Slot Altair On	4.60
2A-3031-1	(SM-6030-1) P.B. Bushing	.45
2A-3032-2	(SM-6030-2) P.B. Bushing From Cheetah On	.45
2A-3032-1	(SM-6029-1) P.B.	.40
2A-3032-2	(SM-6029-2) P.B. From Cheetah On	.40
2A-3035-4	(SM-225-4) O.S. P.B. 9/16" Dia x 1 9/16" Long	.40
2A-3039-2	(SM-6029-2) S.A. Lucite Credit Button	1.40
2A-3126	(SM-11028) Roller Back Door Lift	.30
2A-3128	(SM-5714) O.S. Hood Support Post 11 3/4" Long	1.60
2B-3149	(SM-3559) Pin Panel Reset Bar 20 1/16" Long	2.10
2A-3193	(SM-5503) Shoulder Screw For Lamp Socket O.S. Drum Unit	.45
2A-3261	(SM-4520) O.S. Hood Support Post 7 3/16" Long	1.10
3A-6093-4	(P-5625) Red 1 1/4" Dia Playfield Insert Plain	.12
3A-6093-5	(P-5625) White 1 1/4" Dia Playfield Insert Plain	.12
3A-6093-6	(P-5625) Yellow 1 1/4" Dia Playfield Insert Plain	.12
3A-6093-5	(P-5625) White Numbered 1 1/4" Dia Insert-Specify No. Req.	.16
3A-6096-4	(7/8" Dia Red Plastic Coin Box Insert	.08
3A-7167-5	1 3/16 Dia Insert White Altair S.A.	.12
3A-7167-9	1 3/16" Dia Insert Red Altair S.A.	.12
3A-7172-3	Personalization Extrusion	.80
3A-7173-3	Personalization Diffuser	1.20

3 B - 7174 COMPLETE PERSONLIZATION KIT

1 COMPLETE SET OF 3 B-7174 consists of the total Characters,  
and Quantities listed below .

<u>PART NUMBER</u>	<u>CHARACTER</u>	<u>QUANTITY</u>	<u>PART NUMBER</u>	<u>CHARACTER</u>	<u>QUANTITY</u>
3 B 7174- A	A	20	3 B 7174- W	W	5
3 B 7174- B	B	5	3 B 7174- X	X	5
3 B 7174- C	C	10	3 B 7174- Y	Y	10
3 B 7174- D	D	10	3 B 7174- Z	Z	5
3 B 7174- E	E	25	3 B 7174- 1	1	5
3 B 7174- F	F	5	3 B 7174- 2	2	5
3 B 7174- G	G	5	3 B 7174- 3	3	5
3 B 7174- H	H	15	3 B 7174- 4	4	5
3 B 7174- I	I	20	3 B 7174- 5	5	5
3 B 7174- J	J	5	3 B 7174- 6	6	5
3 B 7174- K	K	5	3 B 7174- 7	7	5
3 B 7174- L	L	10	3 B 7174- 8	8	5
3 B 7174- M	M	10	3 B 7174- 9	9	5
3 B 7174- N	N	20	3 B 7174- 0	0	5
3 B 7174- O	O	20	3 B 7174- 11	SPACER	20
3 B 7174- P	P	5			
3 B 7174- Q	Q	5	3 B 7174- 13	AND ( & )	5
3 B 7174- R	R	10	3 B 7174- 14	COMMA ( , )	5
3 B 7174- S	S	20	3 B 7174- 15	DASH ( - )	5
3 B 7174- T	T	25	3 B 7174- 16	PERIOD ( . )	5
3 B 7174- U	U	10	3 B 7174- 17	APOSTROPHE ( ' )	5
3 B 7174- V	V	5			

PART # 3 B-7174, COMPLETE PERSONALIZATION KIT - DISTR. PRICE - LIST \$ 15.00 EA.

MINIMUM REORDERS - 25 letters, numbers, or characters of same denomination,

( EX: 25 - A's, 25- # 1's, etc. ) cost 8¢ per letter or \$ 2.00 list per bag.

## SHUFFLE ALLEY

## PARTS NOT LISTED CHECK IN 1966 CATALOG

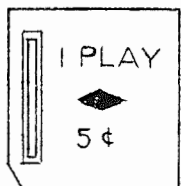
PART NO.	DESCRIPTION	PRICE
3A-7175-4	(P-3501) Red Arrow Type Playfield Insert	.30
3A-7178	(P-4801) Plastic Bowling Pin Only	.85
3A-7178-1	(P-4801) Plastic Bowling Pin W/Brkt. O.S.	1.00
3A-7178-2	(P-4801) Plastic Bowling Pin W/New Type Brkt	1.40
3A-7178-3	(P-4801) Plastic Bowling Pin W/New Type Brkt & Wire Form	1.60
3C-7228	O.S. Plastic Info Card Cover	.40
3A-7243-4	Back Glass Binder Top (1 Per Set)	.35
3A-7243-5	Back Glass Binder Sides (2 Per Set)	.30
3A-7247-9	New Arrow Type Insert Altair S.A.	.30
5A-6137	(8280K15) Toggle Switch	1.10
5A-6205	Singel 110 V. Outlet Surface Mtd.	.30
5A-6215-3	(71S3) 3 Pt. Amphenol Female Socket	.32
5A-6215-9	9 Pt. Amphenol Female Socket	.60
5A-6215-12	12 Pt. Amphenol Female Socket	.80
5A-6216-3	3 Pt. Amphenol Male Plug	.28
5A-6216-9	9 Pt. Amphenol Male Plug	1.10
5A-6216-12	12 Pt. Amphenol Male Plug	1.30
5A-6217	2 Watt 2700 OHM Resistor	.42
5A-6228	(8411 K 8) Normally Closed P.B. Switch	.70
5A-6229	(8411 K-11) Normally Open P.B. Switch	.70
5A-6240	(#620) Push Button Switch	1.30
#8 Series	S.A. Score Plexiglass Give Name of Game & Number Screened on Plexiglass	37.50
#8 Series	S.A. Hood Plexiglass Give Name of Game & Number Screened on Plexiglass	17.00
9C-8701	3 Way Coin Acceptor Specify Denomination	24.00
9C-8702	2 Way Coin Acceptor Specify Denomination	20.00
9C-8703	1 Way Coin Acceptor Specify Denomination	15.00
9C-8801	5¢ Coin Acceptor	10.00
9C-8802	10¢ Coin Acceptor	10.00
9C-8803	25¢ Coin Acceptor	10.00
	Foreign Coin Acceptors Prices Vary	
10A-238	Shock Mt. Springs (AC Relay Strips)	.10
10A-265	Wiper Spring	.06
10A-295	Pin Hanger Main Spring Long Replaces 10A-254 Spring	.22
10A-296	Pin Hanger Main Spring Short Replaces 10A-264 Spring	.20
12A-6245	1/8" Hairpin Clip	.02
12A-6267-A	Hairpin Clip	.02
12A-6345	Hood Lift Ring	.10
12 Series	Pin Reset Wire Forms - See Pages 111 & 124	
12A-6357	(S-6121) Reinforcing Clip For Plastic Pins	.03
12A-6382	(S-4794) Retainer For 3 Pt. Amphenol	.25
16C-8606	3 Way Coin Entry Instruction Plates - See Pages 71-72-73 Specify Coin Denomination	.90
16C-8616	Credit Type Info Cards. From Cheetah On	.60
16C-8616-1	(P-6183) O.S. Game Info Credit Type Info Card Reads - 2 Plays for 25¢ From Astro S.A. 8-5-63 To Mambo S.A. 2-23-65. Use 1C-4046-1 Plastic Cover w/This	.60

## SHUFFLE ALLEY

## PARTS NOT LISTED CHECK IN 1966 CATALOG

PART NO.	DESCRIPTION	PRICE
16C-8616-2	(P-6167) Game Info Credit Type Info Card From Astro To Mambo Reads - 1 Game Dime or 2 Nickles - 3 Games Quarter - Single Coin Only - 6 Games 50¢. Use 1C-4046-1 Plastic Cover W/This.	.60
16C-8616-3	(P-6161) Same As 8616-2 Except 7 Games 50¢. Use 1C-4046-1 Plastic Cover W/This	.60
16C-8617	STD Game Info Card. 10¢ Per Play From Cheetah On Use 1C-3974-1 Plastic Cover W/This	.60
16C-8617-1	(P-6163) STD Info Card - 10¢ Per Play From Astro To Mambo. Use 1C-4046-3 Plastic Cover W/This	.60
16C-8617-2	(P-6165) Std Info Card - 2 Nickels Per Play From Astro To Mambo. Use 1C-4046-3 Plastic Cover W/This	.60
16C-8623	O.S. Information Cards. See Page 119 & 120	





## COIN ENTRY PLATE and SLUG REJECTORS

ENTRY PLATE PART NO.	ENTRY PLATE IDENTIFICATION	COUNTRY	REJECTOR PART NO.
16 C 8640-1	1 Play - 5¢	U. S. A., Panama	9 C 8801
16 C 8640-1	1 Play - 5¢	Australia	9 C 8847
16 C 8640-1	1 Play - 5¢	Canada	9 C 8804
16 C 8640-2	2 Plays - Dime	U. S. A., Canada, Panama	9 C 8802
16 C 8640-3	5 Plays - Quarter	U. S. A.	9 C 8803
16 C 8640-3	5 Plays - Quarter	Canada	9 C 8805
16 C 8640-3	5 Plays - Quarter	Panama	9 C 8852
16 C 8640-4	1 Play - 2 Nickels	U. S. A., Panama	9 C 8801
16 C 8640-5	1 Play - Dime	U. S. A., Canada, Panama	9 C 8802
16 C 8640-6	3 Plays - Quarter	U. S. A.	9 C 8803
16 C 8640-6	3 Plays - Quarter	Canada	9 C 8805
16 C 8640-6	3 Plays - Quarter	Panama	9 C 8852
16 C 8640-7	1 Spiel - 20 Pfg (2 x 10 Pfg)	Germany	9 C 8841
16 C 8640-8	3 Spiele - 50 Pfg	Germany	9 C 8842
16 C 8640-9	6 Spiele - 1 Mark	Germany	9 C 8843
16 C 8640-10	1 Spel - 25 Ct	Holland	9 C 8838
16 C 8640-11	1 Peli - 20 Pennia	Finland	9 C 8832
16 C 8640-12	3 Pelia - 50 Pennia	Finland	9 C 8834
16 C 8640-13	6 Pelia - 1 Mark	Finland	9 C 8833
16 C 8640-14	1 Partie - 20 ¢	France	9 C 8817
16 C 8640-14	1 Partie - 20 ¢	Switzerland	9 C 8829
16 C 8640-15	5 Parties - 1 Franc	France	9 C 8818
16 C 8640-16	1 Partie - 40¢ (2 x 20¢)	France	9 C 8817
16 C 8640-17	3 Parties - 1 Franc	France	9 C 8818
16 C 8640-18	1 Partie - 1 Franc	France	9 C 8818
16 C 8640-19	1 Jeu - 25 Piastres	Lebanon	9 C 8819
16 C 8640-20	3 Jeu - 50 Piastres	Lebanon	9 C 8820
16 C 8640-21	1 Partida - 2 Ptas (2 x 1 Ptas)	Spain	9 C 8813
16 C 8640-22	3 Partidas - 5 Ptas	Spain	9 C 8814
16 C 8640-23	1 Partida - 3 Ptas (3 x 1 Ptas)	Spain	9 C 8813
16 C 8640-24	2 Partidas - 5 Ptas	Spain	9 C 8814
16 C 8640-25	1 Partida - 10 Ptas (2 x 5 Ptas)	Spain	9 C 8814
16 C 8640-26	3 Jeux - Frs b5	Belgium	
16 C 8640-27	1 Jeu - Frs b2 (2 x 1 Franc)	Belgium	9 C 8839
16 C 8640-28	1 Spel - b Frs 2 (2 x 1 Franc)	Belgium	9 C 8839
16 C 8640-29	3 Spelen - b Frs 5	Belgium	
16 C 8640-30	1 Spel - 50 Ore	Sweden	9 C 8807
16 C 8640-31	3 Spel - 1 Krone	Sweden	9 C 8808
16 C 8640-32	1 Spel - 2 x 25 Ore	Sweden	9 C 8806
16 C 8640-33	1 Spil - 25 Ore	Denmark	9 C 8809
16 C 8640-34	5 Spil - 1 Krone	Denmark	9 C 8810
16 C 8640-35	1 Spil - 2 Krone (2 x 1 Krone)	Denmark	9 C 8810
16 C 8640-36	1 Juego - B <sup>s</sup> .025	Venezuela	9 C 8823
16 C 8640-37	2 Juegos - B <sup>s</sup> .050	Venezuela	9 C 8824
16 C 8640-38	4 Juegos - B <sup>s</sup> 1.00	Venezuela	9 C 8825
16 C 8640-39	1 Juego - 50 Centimos	Venezuela	9 C 8824
16 C 8640-40	1 Jeu - 25 Sous	Mauritius	9 C 8850

ENTRY PLATE PART NO.	ENTRY PLATE IDENTIFICATION	COUNTRY	REJECTOR PART NO.
16 C 8640-41	2 Jeux - 50 Sous	Mauritius	9 C 8851
16 C 8640-42	1 Play - 25 Rupee	Mauritius	9 C 8850
16 C 8640-43	2 Plays - 50 Rupees	Mauritius	9 C 8851
16 C 8640-44	1 Play - 1 Token	Bolivia	
16 C 8640-45	1 Play - 25 Mils	Cyprus	9 C 8827
16 C 8640-46	3 Plays - 50 Mils	Cyprus	9 C 8828
16 C 8640-47	1 Play - 1/ piece	England	9 C 8835
16 C 8640-48	1 Play - 6 <sup>d</sup>	England	9 C 8837
16 C 8640-48	1 Play - 6 <sup>d</sup>	Australia	9 C 8847
16 C 8640-49	2 Plays - 1/ piece	England	9 C 8835
16 C 8640-49	2 Plays - 1/ piece	Australia	9 C 8848
16 C 8640-50	5 Plays - 2/ piece	England	9 C 8836
16 C 8640-50	5 Plays - 2/ piece	Australia	9 C 8849
16 C 8640-51	4 Plays - 2/ piece	England	9 C 8836
16 C 8640-51	4 Plays - 2/ piece	Australia	9 C 8849
16 C 8640-52	1 Play - 10¢	Australia	9 C 8848
16 C 8640-53	2 Plays - 10¢	Australia	9 C 8848
16 C 8640-54	4 Play - 20¢	Australia	9 C 8849
16 C 8640-55	5 Play - 20¢	Australia	9 C 8849
16 C 8640-56	3 Play - 20¢	Australia	9 C 8849
16 C 8640-57	1 Partita - 100 Lire	Italy	
16 C 8640-58	1 Partita - 50 Lire	Italy	9 C 8840
16 C 8640-59	3 Partite - 100 Lire	Italy	
16 C 8640-60	1 Spill - 50 Ore	Norway	9 C 8821
16 C 8640-61	2 Spill - 1 Krone	Norway	9 C 8822
16 C 8640-62	1 Spiel - 2 Sch (2 x 1 Sch)	Austria	9 C 8812
16 C 8640-63	1 Spiel - 5 Sch	Austria	9 C 8858
16 C 8640-64	1 Play - 1 Drachma	Greece	9 C 8826
16 C 8640-65	1 Play - 20 Yen (2 x 10 Yen)	Japan	9 C 8844
16 C 8640-66	3 Play - 50 Yen	Japan	9 C 8845
16 C 8640-67	6 Play - 100 Yen	Japan	9 C 8846
16 C 8640-68	1 Play - 50 Yen	Japan	9 C 8845
16 C 8640-69	1 Play - 50 Stang	Thailand	9 C 8856
16 C 8640-70	1 Gioco - 20¢	Switzerland	9 C 8829
16 C 8640-71	1 Spiel - 20 Rappen	Switzerland	9 C 8829
16 C 8640-72	2 Spiele - 50 Rappen	Switzerland	9 C 8830
16 C 8640-73	2 Parties - 50¢	Switzerland	9 C 8830
16 C 8640-74	2 Giochi - 50¢	Switzerland	9 C 8830
16 C 8640-75	4 Spiele - 1 Franken	Switzerland	9 C 8831
16 C 8640-76	4 Parties - 1 Franc	Switzerland	9 C 8831
16 C 8640-77	4 Giochi - 1 Franco	Switzerland	9 C 8831
16 C 8640-78	1 Play - Irish 6 <sup>d</sup>	Ireland	9 C 8853
16 C 8640-79	2 Play - Irish 1 S	Ireland	9 C 8854
16 C 8640-80	5 Play - Irish 2 S	Ireland	9 C 8855
16 C 8640-81	1 Play - 50 Dinara	Yugoslavia	9 C 8857
16 C 8640-82	3 Spiele - 5 Schilling	Austria	9 C 8858
16 C 8640-83	6 Spiele - 10 Schilling	Austria	9 C 8859
16 C 8640-84	1 Play - 25¢	Mauritius	9 C 8850

ENTRY PLATE PART No.	ENTRY PLATE IDENTIFICATION	COUNTRY	REJECTOR PART No.
16 C 8640-90	1 Partie - 50 Franchi	Tunisa	9C-8862
16 C 8640-91	3Parties- 100 Franchi	Tunisa	9C-8865
16 C 8640-92	2 Plays - 10 Escudos	Portugal	9C-8866
16 C 8640-93	1 Play - Forint	Hungary	9C-8867
16 C 8640-94	2 Plays - 2 Forint	Hungary	9C-8861
16 C 8640-95	2 Parties - 100 Franchi	Tunisia	9C-8865
16 C 8640-96	2 Plays - 1 Dinara	Yugoslavia	9C-8868
16 C 8640-97	Her Jeton Icin 1 Oyun	Turkey	9C-8803
16 C 8640-98	Her Jeton Icin 2 Oyun	Turkey	9C-8803
16 C 8640-99	1 Play - 100 Mils	Cyprus	9C-8870
16 C 8640-100	2 Plays - Quarter	U. S. A.	9C-8803
16 C 8640-101	1 Spel - 1 Krona	Sweden	9C-8808
16 C 8640-102	1 Spel - 2 Krona - 2 x 1 Krona	Sweden	9C-8808

## SHUFFLE ALLEY

## PARTS NOT LISTED CHECK IN 1966 CATALOG

PART NO.	DESCRIPTION	PRICE
20A-8867	T Nut of Leg Adj Plate 3/8-16 THD	.16
20A-8746	(#4328) Fluorescent Lamp Holder	1.00
20A-8747	(#7021) Fluorescent Lamp Starter Socket	.60
20A-8748-1	(FS2) 15 Watt Starter	.70
20A-8748-2	(FS25) 25 Watt Starter	.98
20A-8749-1	(CE120) 60 Cycle 20 Watt Ballast	1.50
20A-8749-2	(CE125) 60 Cycle 25 Watt Ballast	2.40
20A-8749-3	(CE115) 60 Cycle 15 Watt Ballast	1.50
20A-8749-6	(CE115-5) 50 Cycle 15 Watt Ballast	2.60
	#214 Lock Key	.32
20A-8832	King Size Puck W/Insert	5.00
20A-8833-S	(#439) Back Door Lock W/#214 Keys With Straight Cam	1.95
20A-8838	(CE-120-5) 50 Cycle - 20 Watt Ballast	2.60
20A-8841	(CE-125-5) 50 Cycle - 25 Watt Ballast	7.40
20A-8852	(#750) 1 1/4" Lock W/Straight Cam For Front Door	2.10
20A-8858	Turn Button For Bottom Back Door	.08
20A-8863	Shuffle Board Wax 1# Can	.96
20A-8882	Gem Lock & Key	4.20
20A-8886	Tube Instrument Grease	.60
20B-8913-L	Cabinet Trim	2.70
20B-8913-R	Cabinet Trim	2.70
23A-96	Rubberized Tilt Bracket	.24
23A-6445	1/4" x 1/2" x 22 1/2" Front Rubber Strip (Black)	.60
23A-6456-3	(P-4617-3) 21 1/2" Long T-Rubber Rebound	4.20
23A-6494	(ST-418R) Rubber Spacer For O.S. Drum Lamp	.04
24A-6590	N.S. Drum Unit Type Socket	.14
24A-6595	(#1-90) Playfield Lite Socket	.24
24A-6596	(P-5508) O.S. Service Clipon Lamp Socket	.28
24B-6597-1	18" Long - 20 Watt Fluorescent Lamp	2.64
24B-6597-2	F20-T-12-24" Long 20 Watt Fluorescent Lamp	2.56
24B-6597-3	18" Long 15 Watt Fluorescent Lamp	2.50
24B-6597-4	F25-T-12-30" Long 25 Watt Fluorescent Lamp	4.08
24B-6597-5	14-T 12 CW Fluorescent Lamp	2.50
24B-6597-6	15-T 12 CW Fluorescent Lamp	2.50
24B-6597-7	(GEF-26T 8 CW4) 26" Long 20 Watt Fluorescent Lamp	5.30
24A-6599	(P-5509) O.S. #81 Lamp Socket Pin Panel	.24
24A-6600	(P-5504) O.S. Drum Unit Type Socket	.16
24A-6601	C7-10 110 Volt Screw Base Lamp	.65
24A-6602	Read Out Lamp Socket	.32
24A-6603	Display Socket	.24
24A-6604	(P-5507) O.S. Coin Slide Drawer Socket	.20
24A-6605	#81 Lamp	.24
24A-6606	#47 Read Out Lamp	.32
24A-6609	(P-5506) 110 Volt Candelabra Socket	.20
24A-6594	#3352 110 Volt Socket For Hood	.36
30C-7000	O.S. Type 5" Drum Reels See Page 162 and 163	.96
30C-7129	4" Drum Reel 0-9 Standard	.96

## SHUFFLE ALLEY

## PARTS NOT LISTED CHECK IN 1966 CATALOG

PART NO.	DESCRIPTION	PRICE
30C-7129-1	4" Drum Reel Frame Unit B.A. & S.A.	.96
30C-7129-5	4" Drum Reel 1 to 9 - Thousands Uprite	.96
30C-7129-6	4" Drum Reel 0-9 Tens & Hundreds Units	.96
30C-7129-7	4" Drum Reel 1-9 Thousand Units Upside Down	.96
M-3-1 P-1500	M Relay Coil	1.60
M-1-34-3000	M Relay Coil	1.60
Z-29-P-1400	Z Relay Coil	1.70
Z-31-P-2000	Z Relay Coil	1.70
Z-32-P-2700	Z Relay Coil	1.70