

Instruction Manual for *DEALERS CHOICE*



Williams® ELECTRONICS

A DIVISION OF
THE SEEBURG CORPORATION OF DELAWARE

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MARCH
1974

Chicago, Ill. 60618, U.S.A.
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FLIPPERSPILL.COM

DEALERS

CHOICE

4 PLAYER

GAME OPERATES AS FOLLOWS:

MAKING TEN, JACK, QUEEN, KING AND ACE WILL LITE RIGHT BOTTOM ROLLOVER TO SCORE SPECIAL.

MAKING TEN, JACK, QUEEN, KING AND ACE AGAIN WILL LITE SIDE ROLLOVER TO SCORE SPECIAL.

ONE REPLAY FOR BALL THRU ROLLOVER WHEN SPECIAL LITE IS LIT.

MAKING 1T09 DOUBLES BONUS VALUE.

MAKING 1T09 AGAIN TRIPLES BONUS VALUE AND LITES 1T09 SPECIAL LITE.

ONE REPLAY EACH TIME 1T09 IS MADE WHEN SPECIAL LITE IS LIT.

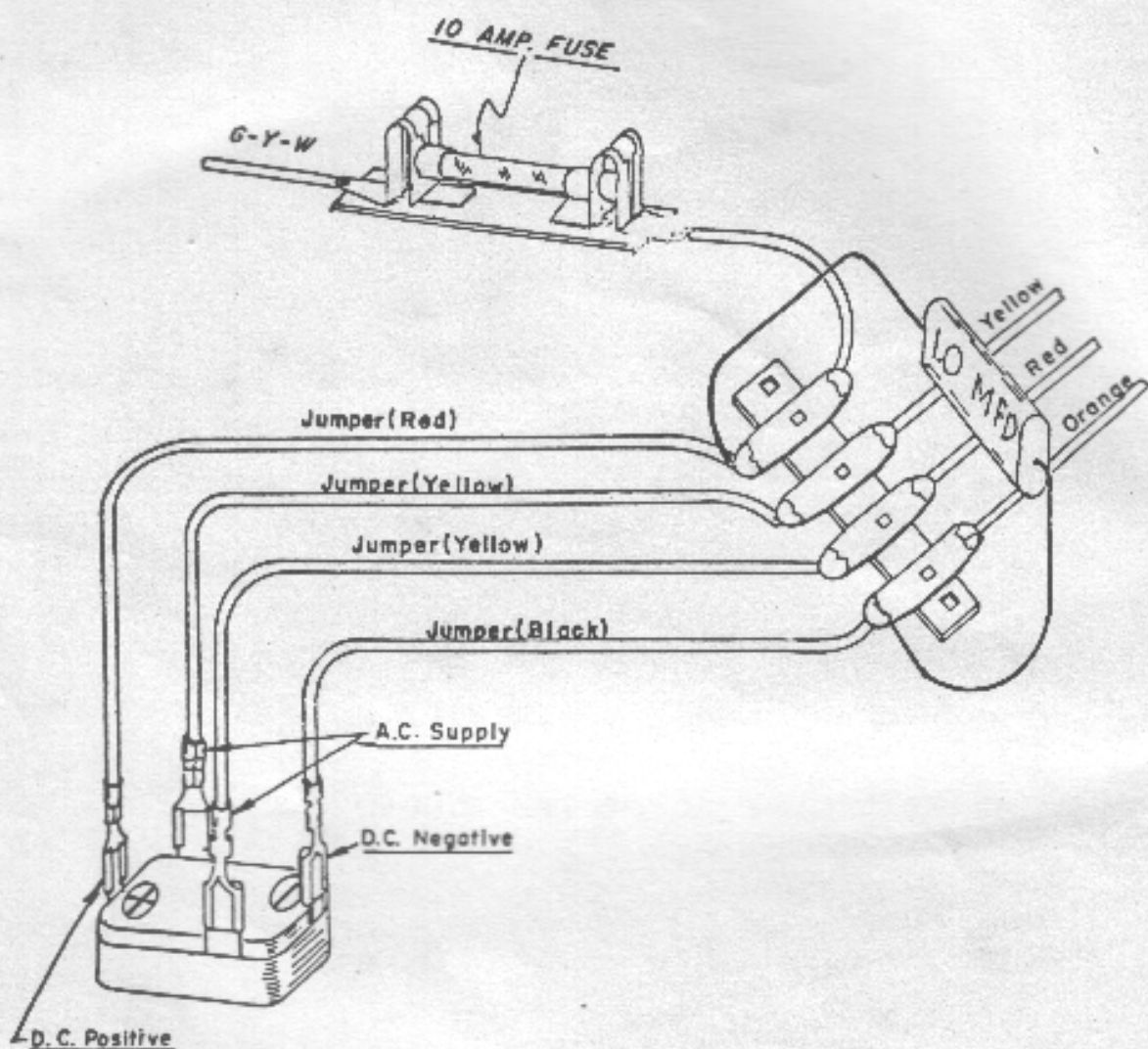
ONE REPLAY FOR EACH PLAYER MATCHING LAST TWO NUMBERS ON SCORE REELS TO LIT NUMBER THAT APPEARS ON BACK-GLASS WHEN GAME IS OVER.

TILT PENALTY- BALL IN PLAY.

TILT DOES NOT DISQUALIFY PLAYER.

SEE "REPLAY-EXTRA BALL" ADJUSTMENT JACK AND "HI-SCORE" ADJUSTMENT JACK ON PAGE 5.

SILICON BRIDGE RECTIFIER



THE FUNCTION OF THE RECTIFIER AND CAPACITOR IS TO CONVERT THE ALTERNATING CURRENT (A.C.) TO DIRECT CURRENT (D.C.), SUPPLYING D.C. TO THE BUMPERS, KICKERS ETC.

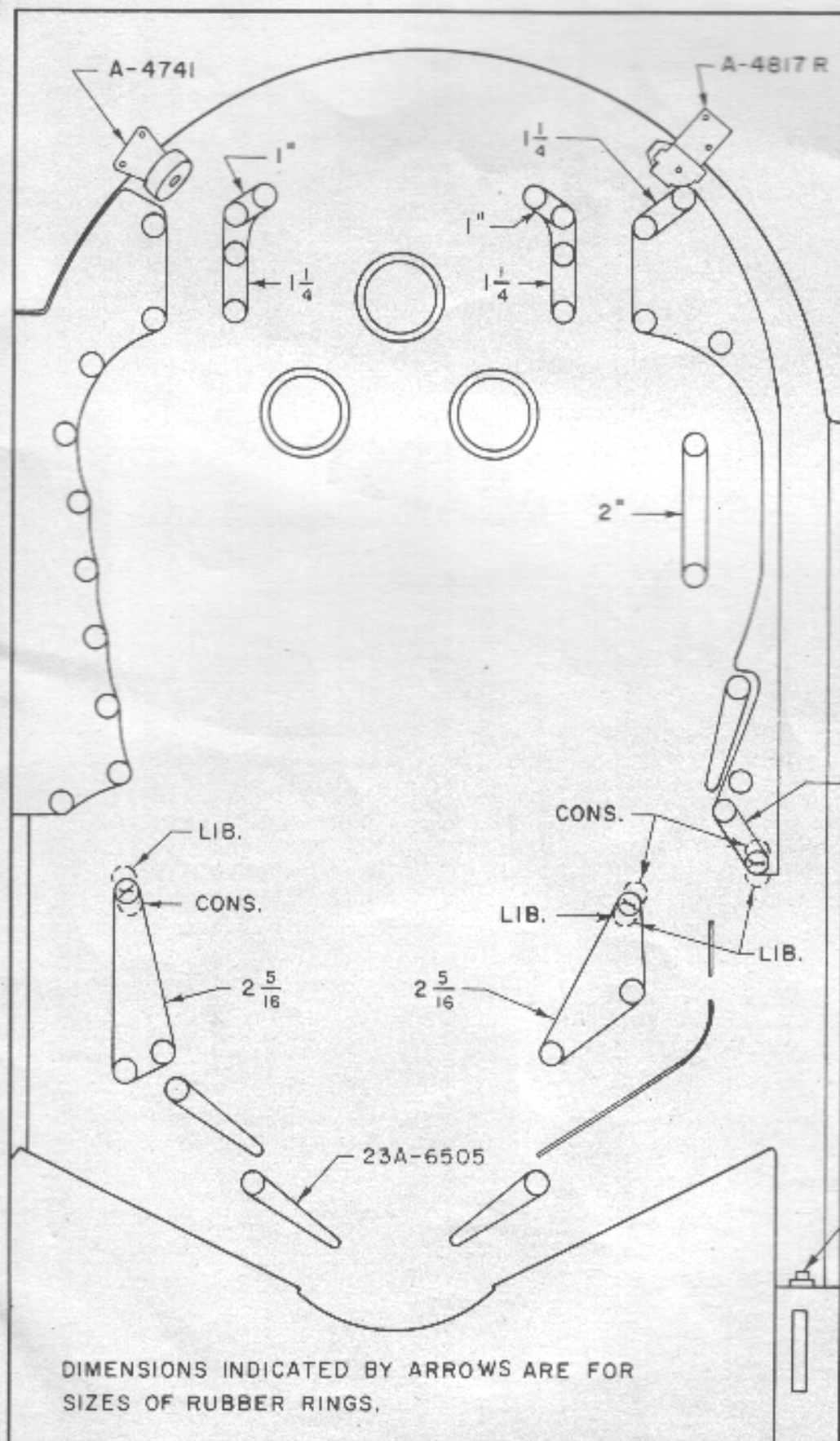
THE BRIDGE RECTIFIER SHOULD PRACTICALLY NEVER NEED REPLACING, AS IT IS RATED WELL OVER THE VOLTAGE AND CURRENT REQUIREMENTS OF THE COMPONENTS IT SUPPLIES.

IF, HOWEVER, THE 15 AMP 24 VOLT FUSE ON THE MECHANISM PANEL OPENS, IT COULD BE DUE TO A FAULTY RECTIFIER. DISCONNECT THE A.C. INPUT TO RECTIFIER, REPLACE FUSE, AND RECHECK.

IF THE 10 AMP FUSE LOCATED NEXT TO THE RECTIFIER OPENS, CHECK ALL D.C. COMPONENTS I.E. BUMPERS, KICKERS ETC. FOR SHORTS.

"DEALERS CHOICE" - POST ADJUSTMENT SHEET

TO MAKE GAME MORE "CONSERVATIVE" OR "LIBERAL" - MOVE POST $\frac{3}{16}$ " AS SHOWN IN SKETCH BELOW. SPOTTING HOLES ARE PROVIDED AND CAN BE SEEN ON REMOVAL OF POSTS.



ABBREVIATIONS :

CONS. - CONSERVATIVE
LIB. - LIBERAL

RUBBER RING NUMBERS :

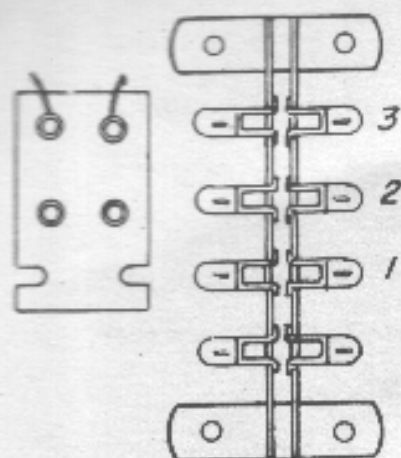
23A-6300	$\frac{5}{16}$ " I.D.
23A-6302	1" I.D.
23A-6303	1 $\frac{1}{4}$ " I.D.
23A-6304	1 $\frac{1}{2}$ " I.D.
23A-6305	2" I.D.
23A-6306	2 $\frac{5}{16}$ " I.D.
23A-6505	1 $\frac{1}{2}$ " I.D.

A-474I REBOUND ASS'Y.
A-48I7R BALL GATE ASS'Y.

23A-6327 BALL SHOOTER
RUBBER TIP

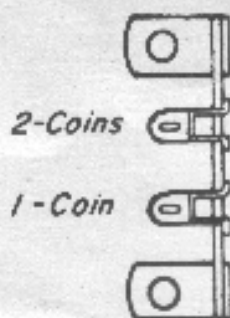
ADJUSTMENTS ON MECHANISM PANEL

10¢ Adjustment



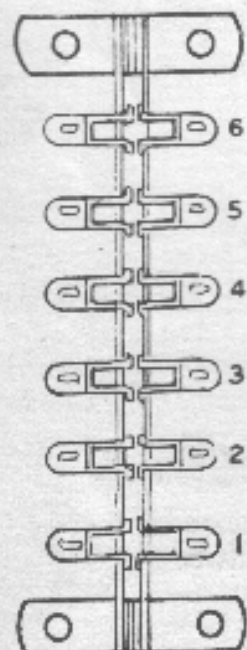
PROVIDES
1, 2 OR
3 PLAYS
FOR ONE
COIN.

5¢ Adjustment



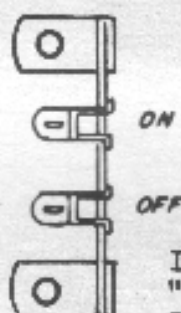
IN "2 COINS FOR
1 PLAY", CIRCUIT
TO COIN RELAY
PASSES THRU SW.
ON ALTERNATOR
UNIT.

25¢ Adjustment



PROVIDES 1, 2, 3, 4, 5
OR 6 PLAYS FOR 25¢.

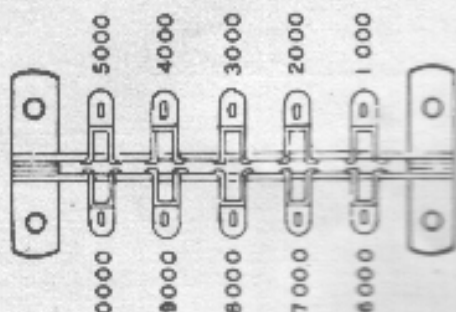
Motor Service Jack



INSERT PHONE TIP IN
"OFF" POSITION - CAMS
CAN BE TURNED BY HAND
TO CHECK ADJUSTMENT OF
SWITCHES.

ADJUSTMENTS IN BACKBOX

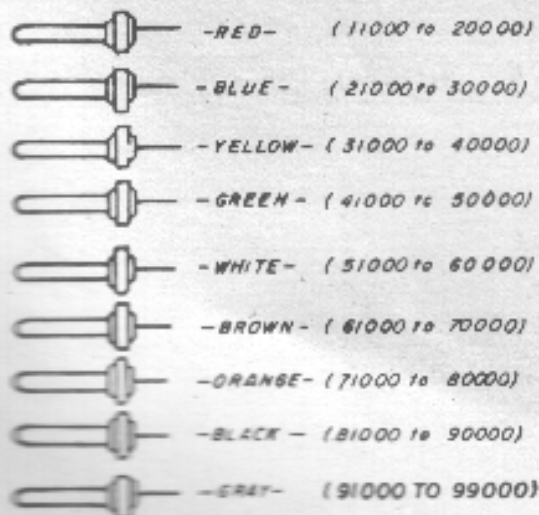
Hi-Score Adjustment



Insert plugs into 10 Point Female at desired positions.

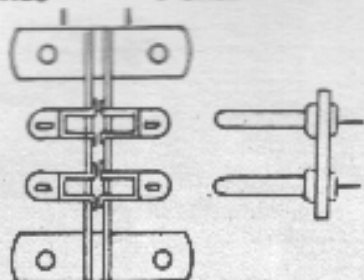
Examples:

Yellow wire into 3000 position scores at 73000.
Yellow wire into 0000 position scores at 40000.



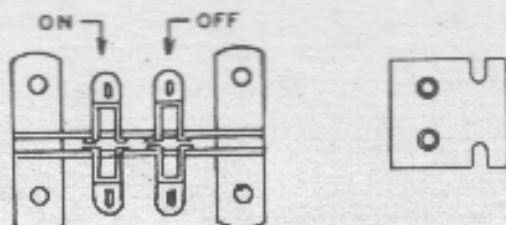
No. of Balls Adjustment

3 BALL 5 BALL



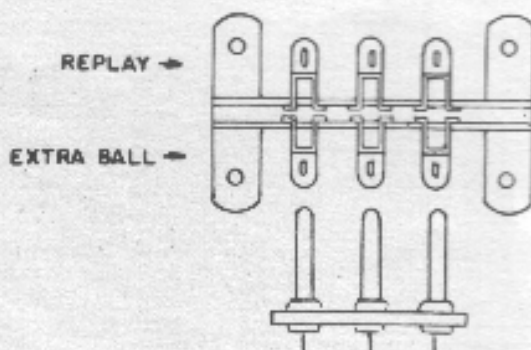
THIS JACK CHANGES 3 BALL TO 5 BALL PLAY OR VICE VERSA.

NUMBER MATCH ADJUSTMENT



In 'ON' position, a number match lite will appear when game is over. To award replays, when number is matched, Extra Ball Adjustment Jack must be in 'Replay' position. In 'Off' position, Number Match is inoperative.

REPLAY-EXTRA BALL ADJ.

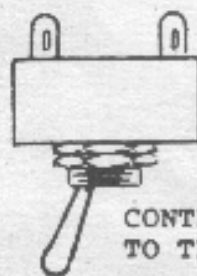


IN REPLAY POSITION: HI-SCORES AND NUMBER MATCH WILL AWARD REPLAYS---MAKING RIGHT SIDE ROLLOVER SWITCH, WHEN SPECIAL RELAY IS ENERGIZED, WILL AWARD A REPLAY---AND "1 TO 9 RESET RELAY". WHEN TRIPLE BONUS RELAY IS ENERGIZED, WILL AWARD A REPLAY.

IN EXTRA BALL POSITION: HI-SCORES WILL AWARD EXTRA BALL, RIGHT SIDE ROLLOVER (AS EXPLAINED ABOVE) AND "1 TO 9 RESET RELAY" (AS EXPLAINED ABOVE) WILL ENERGIZE 5000 RELAY.

MASTER ON-OFF SW.

(Located under front of Cabinet)



CONTROLS POWER TO TRANSFORMER

1. GENERAL

NEVER EXPERIMENT with any of the mechanism. Locate any trouble with the aid of Wiring Diagrams or Operating & Servicing Information supplied with the machine, then check for proper adjustment of the units involved before making any changes. Improper adjustment or make-shift repair will only cause serious damage to other parts of the machine or repeated failure of the part.

NOTE: Always look for a possible loose wire, bad connection at a plug and socket, broken or unhooked springs on step-up units, relays, etc., before adjustments are made or wires reconnected.

2. FUSES

IMPORTANT: Never replace fuses with any rating other than specified on the fuse block; this block is located adjacent to the transformer.

3. LUBRICATION

Over-lubrication causes far more trouble in coin operated equipment than under-lubrication. Practically all cases of poor contact on switches and wiper discs are due to oil or grease, or oil vapor, which forms a film or residue on the contacts and will not allow current to pass through. Excess lubricant may also seep into clutches causing them to slip.

IMPORTANT: NEVER USE VASELINE FOR LUBRICATION OF ANY PART OF THE MACHINE. Vaseline is not a true lubricant. It leaves a dirty and gummy residue and it becomes very thick when cold. A special Coin Machine Lubricant is supplied with each machine.

STEP-UP Levers, Ratchets, Cams, Shafts and other sliding or oscillating parts should be very lightly greased with special Coin Machine Lubricant (supplied with machine) not oftener than every six months. The bakelite discs (biscuits) on the Motor Units and Step-up Units will require lubrication with the special Coin Machine Lubricant only after the grease is completely evaporated (3 to 12 months, depending on climate) or when the film of grease becomes dirty. In either event, clean the parts thoroughly with a solvent, then apply an extremely thin coat of the special grease.

Solenoid Plungers should not have a lubricant of any kind. Should there be a sluggish tendency or if plungers are sticking, the parts should be cleaned with a solvent and flaked graphite applied on reassembly.

SWITCH ADJUSTMENT

BEFORE ADJUSTING SWITCHES, MAKE CERTAIN THE SCREWS HOLDING THE SWITCH STACKS ARE DOWN TIGHTLY. BAKELITE SPACERS IN THE SWITCH STACKS, DUE TO EXCESSIVE MOISTURE, HAVE OCCASIONALLY SHRUNK BY DRYING OUT, CAUSING POOR ADJUSTMENT.

IMPORTANT NOTICE

KINDLY INFORM LOCATIONS THAT THEY
CAN TURN DISPLAY LIGHTS ON BY PRESSING
LEFT FLIPPER BUTTON. MACHINE CAN STILL
BE SHUT OFF BY TAPPING BOTTOM OF
CABINET.

MASTER SWITCH (ON-OFF) IS LOCATED
UNDERNEATH FRONT PART OF CABINET.

CAUTION!

The playboard on this machine has an improved finish with excellent wearing properties. Do not under any circumstances clean the board with water, water soap solutions or harsh abrasives. Avoid such things as steel wool, kitchen cleansers or abrasive hand soap. Water will weaken the adhering of the paint to the board and abrasives shorten the board life by many thousand plays. A wax base cleaner with negligible abrasive qualities used lightly, but frequently, will extend the board life to its full capabilities.

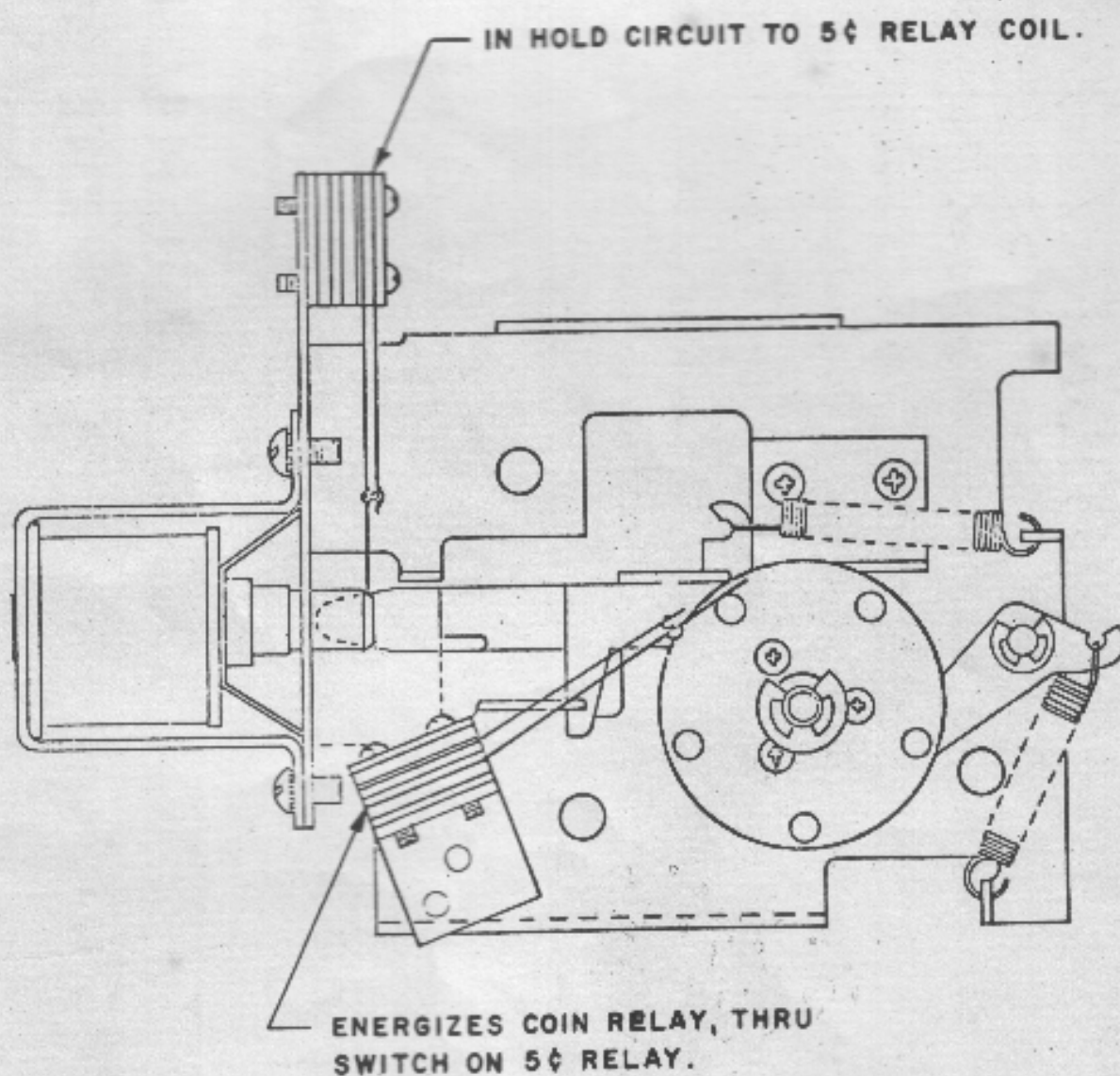
SERVICEMAN TO REMOVE BACKGLASS:

- WITH BACK DOOR REMOVED, PULL BACK ON BRACKETS AT INSIDE TOP OF LITE BOX.
- FROM THE FRONT OF GAME, LIFT GLASS UP AND OUT.

ALTERNATOR UNIT

LOCATED ON MECHANISM PANEL.

USED IN CONJUNCTION WITH 5¢ RELAY FOR "2 COINS-1 PLAY" FEATURE.



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

UNIT NAME	CONTACT DISC	WIPER ASSEMBLY	RATCHET GEAR ASSEMBLY	MOTORS
REPLAY	-----	-----	A-6400-1	
BALL COUNT	C-6414	B-7456-6	A-6402-5	
NO. MATCH	C-6414	B-7456-2	A-6401	
PLAYER	C-6417	C-6521	A-6404-3	
COIN	C-6414	B-7456-9	A-6402-3	
BONUS	C-6417	B-7456-33	A-6402-10	SCORE MOTOR
10 POINT	B-7253	A-6294	3C-7272	14A-7883 (60 CYCLE)
100 POINT	-----	-----	3C-7272	14A-7884 (50 CYCLE)
1000 POINT	B-7253	A-6294	3C-7272	
10000 POINT	B-7253	A-6294	3C-7272	
ALTERNATOR	-----	-----	3C-7272	

"DEALERS CHECK" COIL LIST

NOTICE:

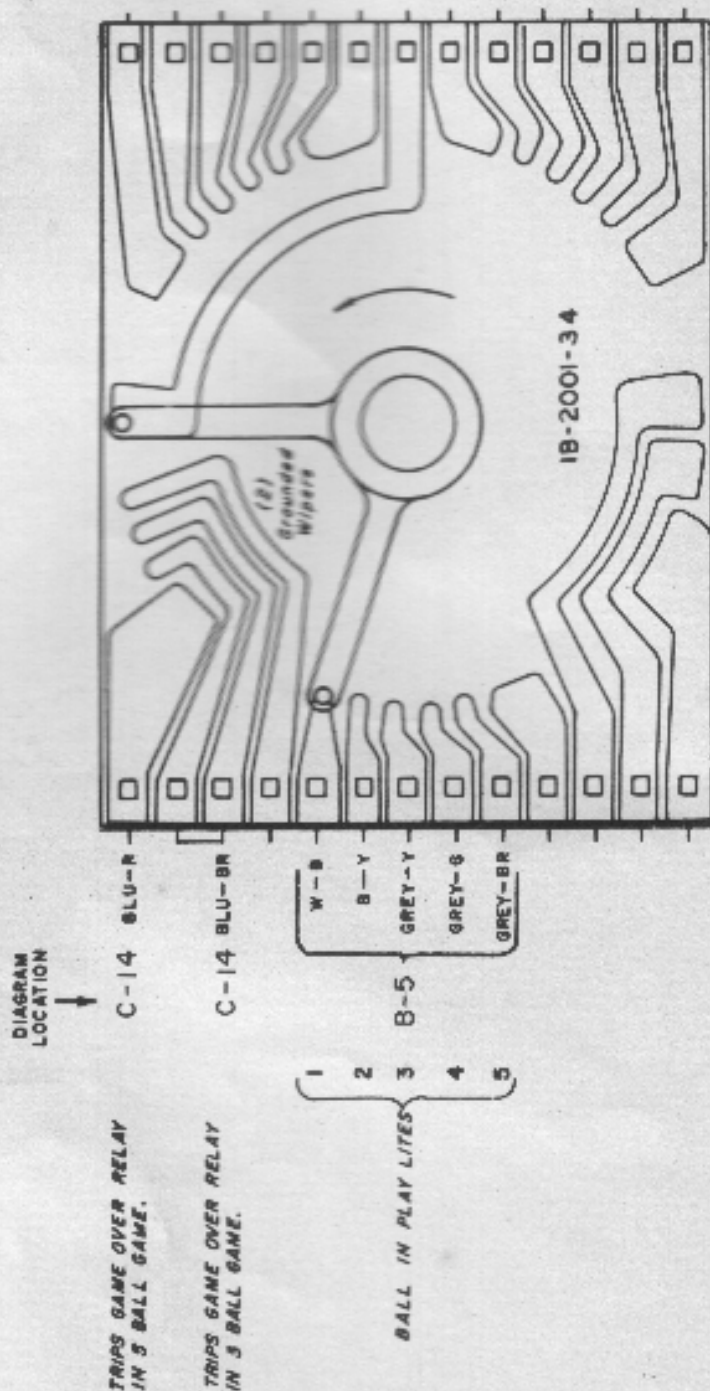
THIS GAME OPERATES ON 24 VOLTS. WHEN ORDERING REPLACEMENT TRANSFORMERS, MOTORS, COILS OR METERS...MAKE SURE TO SPECIFY CORRECT PART NUMBER.

NUMBER	DESCRIPTION	LOCATION
14A-7583	CONTROL MOTOR - 60 CYCLE	MECH. PANEL
14A-7584	CONTROL MOTOR - 50 CYCLE	MECH. PANEL
15A-6771	TRANSFORMER - 60 CYCLE	MECH. PANEL
15A-6762-1	TRANSFORMER - 50 CYCLE	MECH. PANEL
B 6396	24 VOLT METER	MECH. PANEL
<u>SOLENOID COILS</u>		
A 22-550	COIN UNIT STEP UP BONUS UNIT STEP UP PLAYER UNIT STEP UP BALL RELEASE	MECH. PANEL PLAYFIELD INSERT PLAYFIELD
A 23-600	BALL COUNT UNIT STEP UP REPLAY UNIT STEP UP NUMBER MATCH UNIT STEP UP	MECH. PANEL INSERT INSERT
A2 23-750	KNOCKER	CABINET
A2 26-1300	CHIME COILS...(3 req'd)	CABINET
B 26-800	BALL COUNT UNIT RESET COIN UNIT RESET ALTERNATOR UNIT STEP UP PLAYER UNIT RESET	MECH. PANEL MECH. PANEL MECH. PANEL INSERT
B1-26-800	REPLAY UNIT RESET SCORE DRUM UNITS...(16 req'd) BONUS UNIT RESET	INSERT INSERT PLAYFIELD
B1 24-1600	HANK RESET COILS...(2 req'd)	PLAYFIELD
PL 21-375/28-400	FLIPPERS...(4 req'd)	PLAYFIELD
G 23-750 D.C.	JET BUMPER COILS...(3 req'd) AUTOMATIC KICKERS...(2 req'd)	PLAYFIELD PLAYFIELD
M 29-900	1-2 RESET RELAY 3-4 RESET RELAY RESET RELAY	INSERT INSERT MECH. PANEL
M 29-1000	GAME OVER RELAY TRIP	MECH. PANEL
M 29-1100	10 POINT RELAY 100 POINT RELAY 1,000 POINT RELAY ADVANCE RELAY 50 POINT RELAY 5,000 POINT RELAY BONUS RELAY 1 TO 9 RESET RELAY 10 TO ACK RESET RELAY 5¢ RELAY 10¢ RELAY 25¢ RELAY OUTHOLE RELAY	INSERT INSERT INSERT PLAYFIELD PLAYFIELD PLAYFIELD PLAYFIELD PLAYFIELD PLAYFIELD PLAYFIELD MECH. PANEL MECH. PANEL MECH. PANEL MECH. PANEL
M 1-31-1500	COIN LOCKOUT COIL	FRONT DOOR
S 27-500	HANK TRIP COILS...(14 req'd)	PLAYFIELD
XM 27-675	TOTAL PLAY METER COIL	MECH. PANEL
Z 27-1000	GAME OVER RELAY LATCH PLAYER RESET RELAY REPLAY RELAY COIN RELAY	MECH. PANEL MECH. PANEL MECH. PANEL MECH. PANEL
Z 28-1150	DOUBLE BONUS RELAY TRIPLE BONUS RELAY SET UP RELAY TILT RELAY BALL INDEX RELAY KATKA BALL RELAY	PLAYFIELD PLAYFIELD PLAYFIELD MECH. PANEL MECH. PANEL MECH. PANEL
Z 28-1200	SPECIAL RELAY	PLAYFIELD
Z 29-1250	LOCK RELAY	MECH. PANEL

BALL COUNT UNIT DISC

THIS UNIT RESETS AT THE START OF A NEW GAME, (DURING RESET CYCLE). IT ADVANCES ONE STEP EACH TIME THE LAST PLAYER COMPLETES HIS TURN.

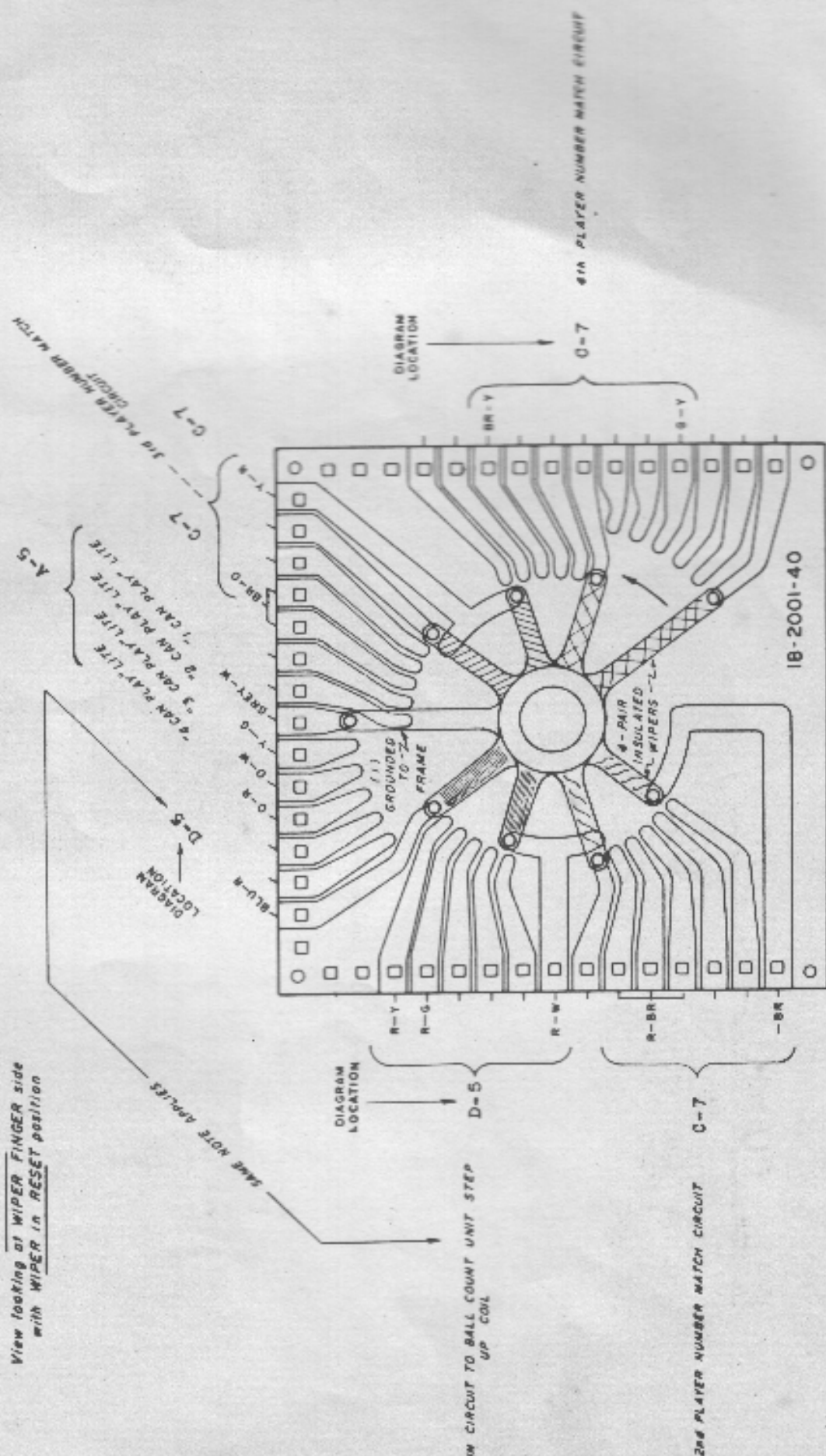
View looking at WIPER FINGER side with WIPER in ZERO position.



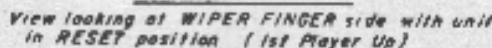
COIN S. U. DISC

THIS UNIT RESETS AT START OF A GAME (DURING RESET CYCLE). IT THEN ADVANCES ONE STEP EACH TIME THE COIN RELAY IS PULSED.

View looking at WIPER FINGER side with WIPER in RESET position



PLAYER UNIT DISC



BONUS UNIT

THIS UNIT STEPS UP EACH TIME THE 'ADVANCE RELAY' IS PULSED.

ALSO, AFTER THIS UNIT HAS BEEN RESET TO ZERO, THE STEP-UP COIL IS ENERGIZED ONCE BY SCORE MOTOR CAM SWITCH 6A, THRU BONUS UNIT WIPER FINGERS.

THE RESET COIL IS ENERGIZED BY BONUS RELAY, THRU DOUBLE BONUS RELAY AND SCORE MOTOR CAM SWITCH 4C OR IMPULSE CAM SWITCH A.

B-6

1000

2000

3000

4000

5000

6000

7000

8000

9000

10,000

BONUS

LITES

B-7

TO BONUS UNIT S.U. COIL
THRU CAM SWITCH 6A.

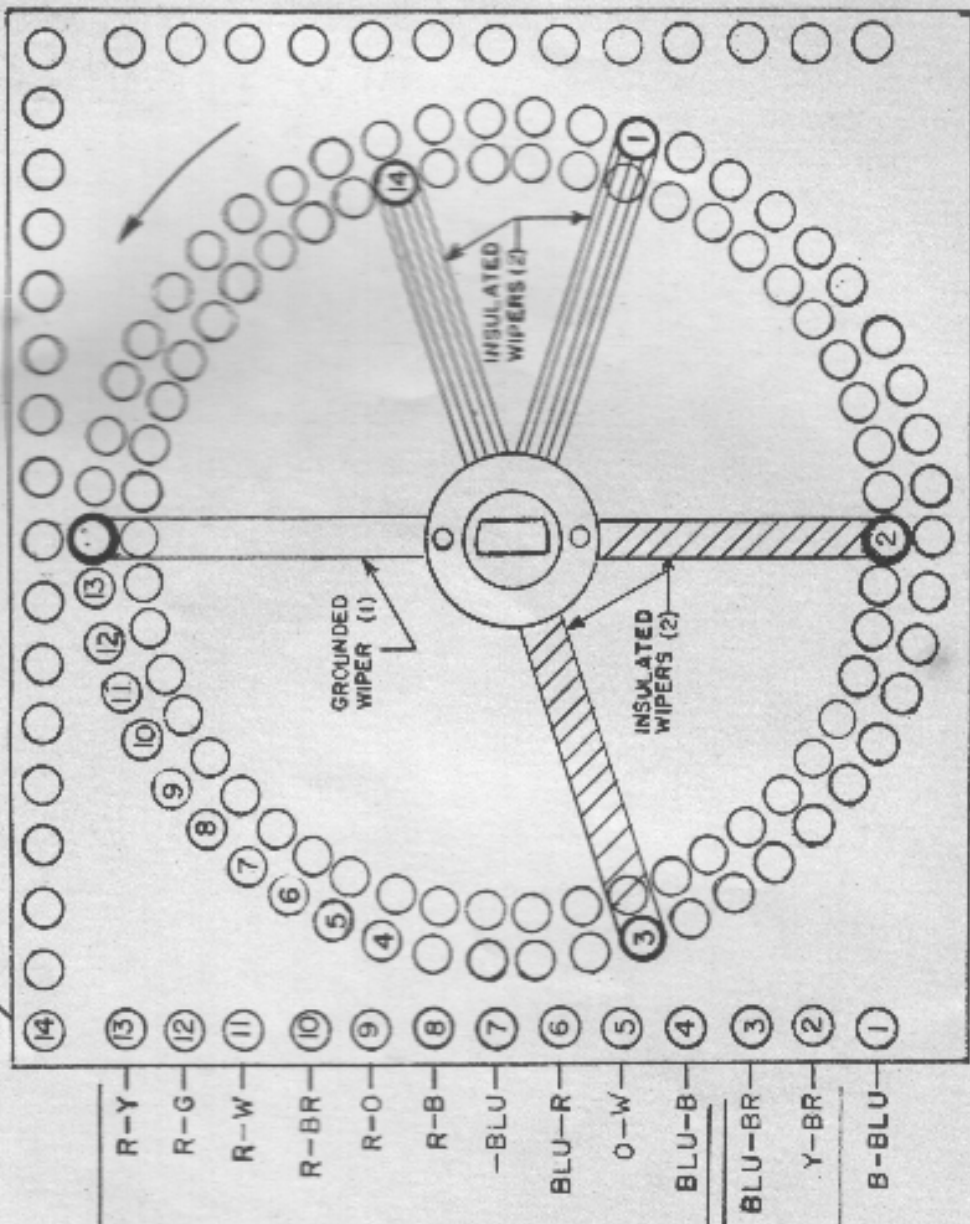
D-12

PULSES OUTHOLE RELAY
AT CAM SWITCH 6B.

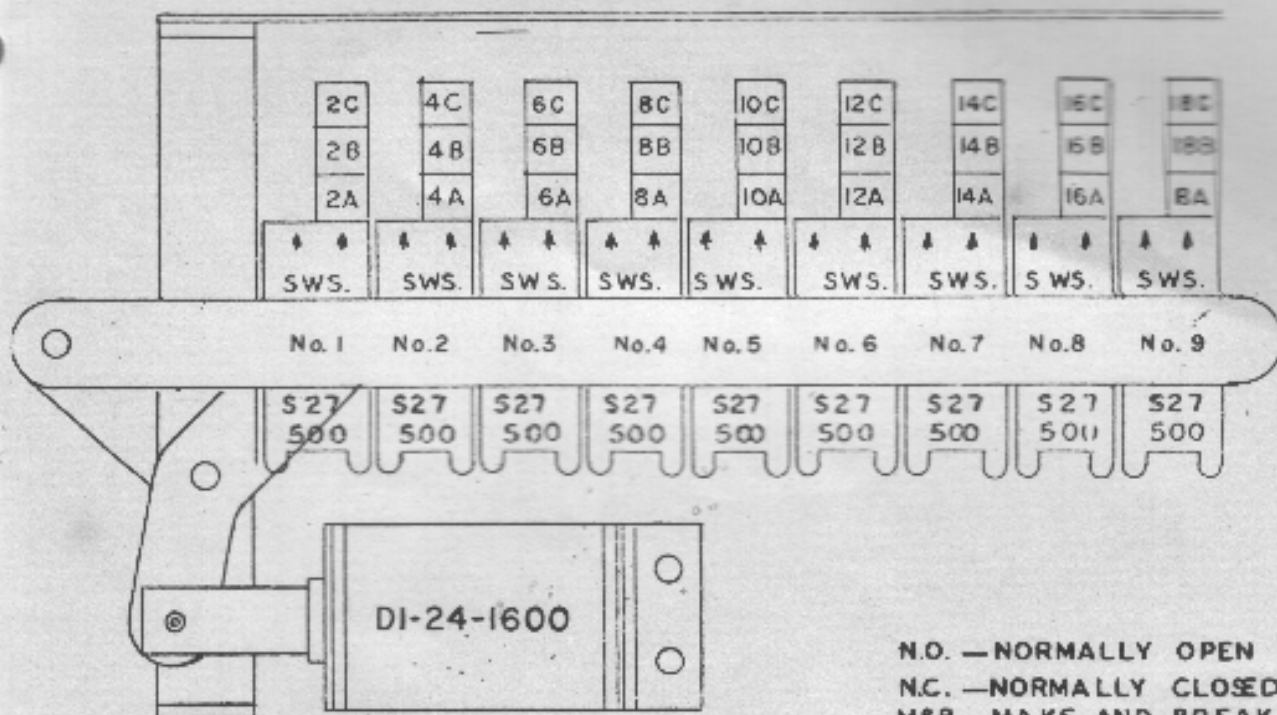
D-13

VIEW LOOKING AT WIPER FINGER SIDE,
WITH WIPER IN ZERO POSITION.

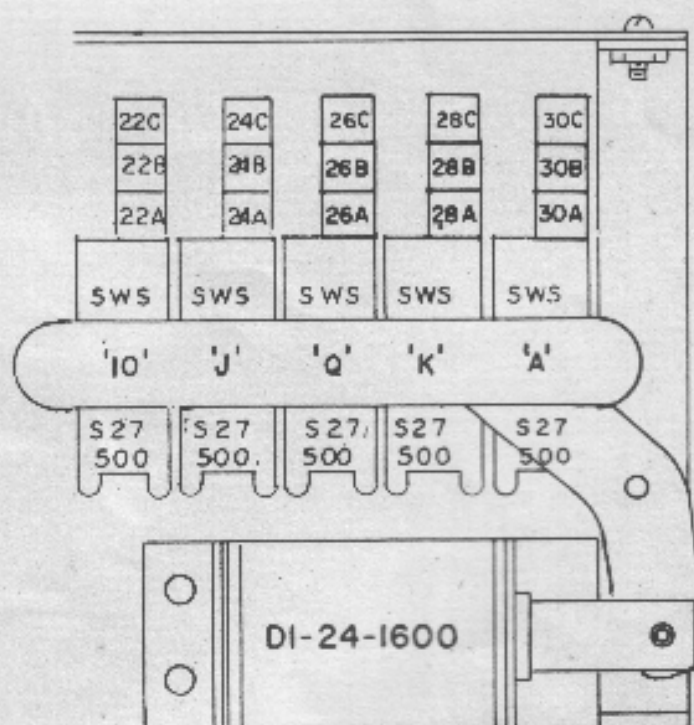
SEE #1 (B-BLU) D-13
W-R



RELAY BANK SWS

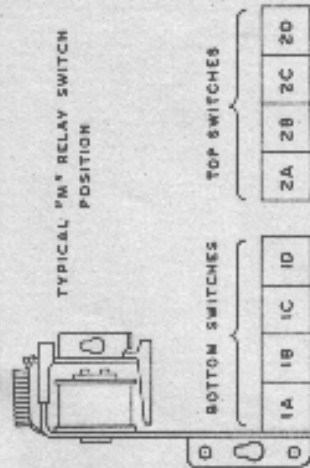


N.O. — NORMALLY OPEN SWITCH
 N.C. — NORMALLY CLOSED SWITCH
 M&B — MAKE AND BREAK SWITCH



RELAY	SW.	WIRE COLORS	DIAGRAM LOCATION	TYPE	SWITCH OPERATION
NO. 1 RELAY	2C	-J- R-Y R-G	E-18	M&B	OPENS TO NO. 1 RELAY COIL AND CLOSES TO 50 POINT RELAY (THRU NO. 1 ROLLOVER BUTTON SWITCH).
	2B	-O- -W-	A-7	N.C.	TO NO. 1 LITE
	2A	B-W -J-	C-12	N.O.	IN SERIES WITH SWITCH 4A ON NO. 2 RELAY.
NO. 2 RELAY	4C	-J- R-W R-G	E-18	M&B	OPENS TO NO. 2 RELAY COIL AND CLOSES TO 50 POINT RELAY (THRU NO. 2 ROLLOVER BUTTON SWITCH).
	4B	O-R -W-	A-7	N.C.	TO NO. 2 LITE.
	4A	-J- -J-	D-12	N.O.	IN SERIES WITH SWITCH 6A ON NO. 3 RELAY.
NO. 3 RELAY	6C	-J- R-O R-G	E-19	M&B	OPENS TO NO. 3 RELAY COIL AND CLOSES TO 50 POINT RELAY (THRU NO. 3 ROLLOVER BUTTON SWITCH).
	6B	O-BLU -W-	A-8	N.C.	TO NO. 3 LITE.
	6A	-J- -J-	D-12	N.O.	IN SERIES WITH SWITCH 8A ON NO. 4 RELAY.
NO. 4 RELAY	8C	-J- R-B R-G	E-19	M&B	OPENS TO NO. 4 RELAY COIL AND CLOSES TO 50 POINT RELAY (THRU NO. 4 ROLLOVER BUTTON SWITCH).
	8B	O-G -W-	A-8	N.C.	TO NO. 4 LITE.
	8A	-J- -J-	D-12	N.O.	IN SERIES WITH SWITCH 10A ON NO. 5 RELAY.
NO. 5 RELAY	10C	-J- BLU-Y R-G	E-19	M&B	OPENS TO NO. 5 RELAY COIL AND CLOSES TO 50 POINT RELAY (THRU NO. 5 ROLLOVER BUTTON SWITCH).
	10B	O-W -W-	A-8	N.C.	TO NO. 5 LITE.
	10A	-J- -J-	D-12	N.O.	IN SERIES WITH SWITCH 12A ON NO. 6 RELAY.

RELAY	SW.	WIRE COLORS	DIAGRAM LOCATION	TYPE	SWITCH OPERATION
'J' RELAY	24C	G-O -J-	E-20	N.C.	TO 'J' RELAY COIL, FROM 'J' TARGET SWITCH.
	24B	GRAY-BLU -W-	A-8	N.O.	TO 'J' LITE.
	24A	-J- -J-	D-12	N.O.	IN SERIES WITH SWITCH 26A ON 'Q' RELAY.
'Q' RELAY	26C	W-G -J-	E-20	N.C.	TO 'Q' RELAY COIL, FROM 'Q' TARGET SWITCH.
	26B	GRAY-Y -W-	A-9	N.O.	TO 'Q' LITE.
	26A	-J- -J-	D-12	N.O.	IN SERIES WITH SWITCH 28A ON 'K' RELAY.
'K' RELAY	28C	BR-G -J-	E-20	N.C.	TO 'K' RELAY COIL, FROM 'K' TARGET SWITCH.
	28B	GRAY-G -W-	A-9	N.O.	TO 'K' LITE.
	28A	-J- -J-	E-12	N.O.	IN SERIES WITH SWITCH 30A ON 'A' RELAY.
'A' RELAY	30C	BR-B -J-	E-20	N.C.	TO 'A' RELAY COIL, FROM 'A' TARGET SWITCH
	30B	GRAY-BR -W-	A-9	N.O.	TO 'A' LITE.
	30A	-J- R-BLU	E-12	N.O.	IN SERIES CIRCUIT TO ENERGIZE "10 TO ACE RESET RELAY". (SEE SWITCH 22A ON '10' RELAY.



LOCK

IS ENERGIZED BY 54 RELAY, LEFT FLIPPER SWITCH OR SCORE MOTOR CAM SWITCH 5A.

OUTHOLE

IS ENERGIZED BY SCORE MOTOR CAM SWITCH 6B, THRU BONUS UNIT DISC (IN ZERO POSITION).

PLAYER RESET

IS ENERGIZED BY BALL COUNT UNIT END-OF-SHOCK SWITCH. IT THEN HOLDS IN THRU SCORE MOTOR INDEX CAM SWITCH 2.

A.C. RELAYS & SWITCHES LOCATED ON MECHANISM PANEL

SWITCH TYPE	DIAGRAM LOCATION
N.O.	0-13
B.O.	A-1
N.O.	A-1
N.O.	D-4
N.O.	0-14
N.O.	0-6
N.O.	0-14
N.O.	0-4
N.O.	B-13
N.O.	D-15
N.O.	D-13
N.O.	B-1
N.O.	D-1
N.O.	D-5
N.O.	B-7
N.O.	C-5

ENERGIZES GAME-OVER RELAY (TRIP COIL).

6 VOLTS FROM TRANSFORMER TO LITES.

6 VOLTS FROM TRANSFORMER TO LITES.

HOLD CIRCUIT TO THIS RELAY, THRU CABINET BOTTOM KICK-UP SWITCH.

OPENS IN HOLD CIRCUIT TO SET-UP, DOUBLE, TRIPLE & TILT RELAYS AND CLOSSES IN SERIES WITH SWITCH 8 ON EXTRA BALL RE.

OPENS IN HOLD CIRCUIT TO BALL INDEX RELAY AND CLOSSES TO RUN SCORE MOTOR.

IN HOLD CIRCUIT TO THIS RELAY.

IN HOLD CIRCUIT TO SPECIAL RELAY.

IN CIRCUIT TO BONUS RELAY, THRU OUTHOLE SWITCH.

ENERGIZES 10 TO 98 RELAY BANK RESET COIL, THRU SCORE MOTOR CAM SWITCH 1B.

ENERGIZES 1 TO 9 RELAY BANK RESET COIL, THRU SCORE MOTOR CAM SWITCH 3A.

OPENS IN CIRCUIT TO PLAYER UNIT S.O. COIL AND CLOSSES TO PLAYER UNIT RESET COIL.

IN NUMBER MATCH CIRCUIT TO REPLAY S.O. COIL.

IN HOLD CIRCUIT TO THIS RELAY.

RESET

IS ENERGIZED BY COIN RELAY, THRU SWITCH ON GAME-OVER RELAY.

M.B.	2D	M-BLJ	K-5
		BLD-O	
M.B.	2C	O-BLJ	O-3
		BLD-Y	O-5
		-Y-	
		O-O	
M.O.	2B	BR-B	X-12
M.O.	2A	BLM-BR	
		BLM-M	D-5

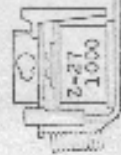
K.O.	1D	R-Y-N	P-13
		BLD-Y-N	
K.O.	1C	-BLJ-	B-1
		PURPLE	
K.O.	1B	-O-	B-1
		PURPLE	
M.O.	1A	O-Y	D-6
		O-BLJ	



REPLAY

IS ENERGIZED BY REPLAY BUTTON, THRU ZERO SWITCH ON THAT UNIT.

K.O.	D	M-GRAY	D-3
		-N-	
K.O.	C	BLD-O	K-5
		R-Y	
K.O.	B	R-BR	D-3
		G-W	
K.O.	A	R-BR	D-3
		R-BLJ	



COIN

IS ENERGIZED BY COIN SWITCH OR REPLAY RELAY--ALSO BY 5¢ RELAY, THRU SWITCH ON ALTERNATOR UNIT--ALSO BY 25¢ RELAY IF GAME IS ADJUSTED TO "6 PLAYS FOR 25¢".

M.O.	D	-Z-	C-4
		O-O	
K.O.	C	-Z-	C-13
		BLD-Y	
M.O.	B	-Z-	C-5
		O-N	
M.O.	A	R-BR	D-3
		O-W	



OPENS IN CIRCUIT TO COIN UNIT B.V. COIL, AND (HOLD) TO COIN COILS ON COIN, BALL COUNT AND GAME-OVER.

OPENS IN CIRCUIT TO REPLAY RELAY AND COIN LOCKOUT COILS CLOSING TO RUN SCORE MOTOR.

ENERGIZES BONUS RELAY, THRU SCORE MOTOR INDEX CAM SWITCH E.

IN HOLD CIRCUIT TO THIS RELAY.

OPENS MOST CIRCUITS TO PLAYFIELD SWITCHES.

ENERGIZES 1-9 RELAY BANK RESET COIL, THRU SCORE MOTOR CAM SWITCH 3A.

ENERGIZES 10 TO ACE RELAY BANK RESET COIL, THRU SCORE MOTOR CAM SWITCH 1B.

IN CIRCUIT TO PLAYER UNIT RESET COIL.

OPENS CIRCUIT TO COIN LOCKOUT COIL.

FILES REPLAY UNIT RESET COIL, THRU SCORE MOTOR CAM SWITCH 1D.

ENERGIZES COIN RELAY.

IN FOLD CIRCUIT TO THIS RELAY.

RUNS SCORE MOTOR.

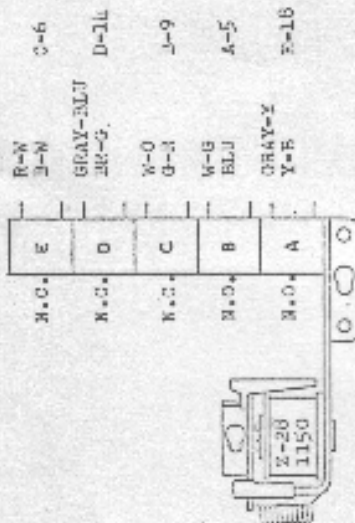
TRIPS GAME-OVER RELAY THRU ZERO SWITCH ON PLAYER UNIT OR BALL COUNT UNIT.

ENERGIZES RESET RELAY, THRU SWITCH C ON GAME-OVER RELAY.

IN HOLD CIRCUIT TO THIS RELAY.

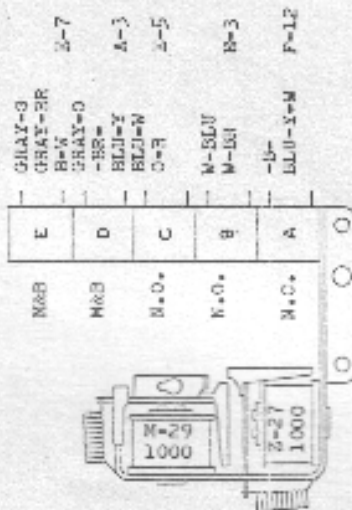
EXTRA BALL

IS ENERGIZED BY RIGHT BOTTOM ROLLOVER SWITCH, THRU SWITCH ON SET-UP RELAY--- ALSO BY HI-SCORE CIRCUIT, THRU "REPLAY- EXTRA BALL" ADJUSTMENT JACK.



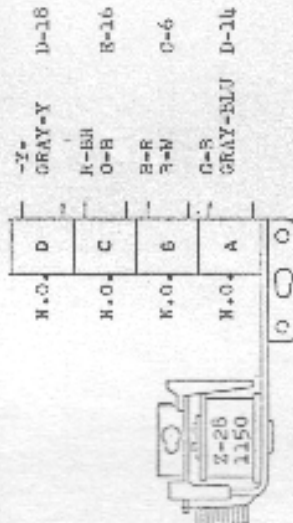
GAME-OVER

IS ENERGIZED BY SCORE MOTOR CAM SWITCH ID, THRU SWITCHES ON COIN RELAY AND RESET RELAY. TRIP COIL IS ENERGIZED BY LOCK RELAY OR WIPER FINGER ON BALL COUNT UNIT---ALSO BY COIN RELAY, THRU A ZERO SWITCH ON EITHER THE BALL COUNT UNIT OR PLAYER UNIT.



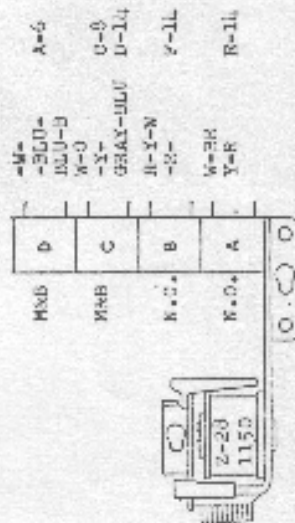
BALL INDEX

IS ENERGIZED BY 10 POINT, 100 POINT OR 1,000 POINT RELAY, THRU SWITCH ON EXTRA BALL RELAY---ALSO BY TILT RELAY.



TILT

IS ENERGIZED BY PLUMB BOB TILT, BALL ROLL- DOWN TILT OR PLAYFIELD VIBRATION TILT SWITCH.



IN SERIES WITH SWITCH B ON BALL INDEX RELAY.

OPENS CIRCUIT TO ENERGIZE BALL INDEX RELAY.

IN CIRCUIT TO "EXTRA BALL WHEN LIT" LITE.

TO "SHOOT AGAIN" LITE.

IN HOLD CIRCUIT TO THIS RELAY.

OPENS IN HI-SCORE CIRCUITS AND CLOSSES TO NUMBER MATCH CIRCUITS.

OPEN TO "PLAYER UP" LITE, AND CLOSSES TO "GAME-OVER" AND "NUMBER MATCH" LITE.

CIRCUIT TO RESET RELAY, THRU SWITCH ON COIN RELAY.

IN CIRCUIT TO REPLAY RELAY.

OPENS MOST CIRCUITS TO PLAYFIELD SWITCHES.

IN SERIES WITH SWITCH A ON EXTRA BALL RELAY.

IN CIRCUIT TO 1,000 POINT RELAY, THRU SWITCH IS ON BONUS RELAY.

IN CIRCUIT TO BALL COUNT UNIT S.U.---ALSO IN SERIES WITH SWITCH ON PLAYER RESET RELAY.

IN HOLD CIRCUIT TO THIS RELAY.

OPENS IN CIRCUIT TO MOST PLAYFIELD LITE AND CLOSSES TO "TILT" LITE.

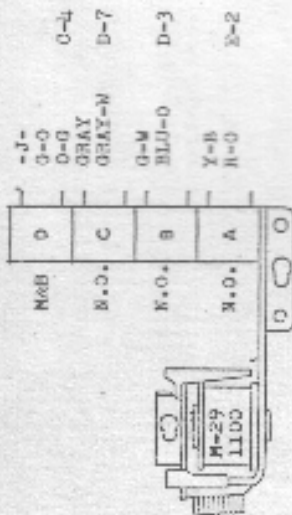
OPENS IN HI-SCORE CIRCUIT TO REPLAY S.U. AND CLOSSES TO ENERGIZE BALL INDEX RELAY.

OPENS CIRCUITS TO MOST PLAYFIELD SWITCHES.

HOLD CIRCUIT TO THIS RELAY, THRU SWITCH ON OFFICIAL RELAY.

25¢

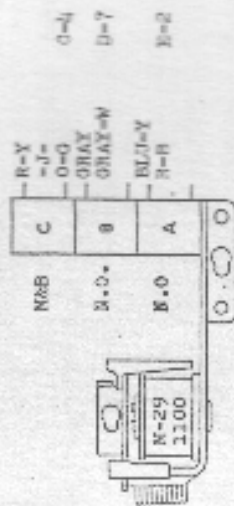
IS ENERGIZED BY 25¢ COIN SWITCH.



OPENS IN CIRCUIT TO KNOCKER COIL AND CLOSERS TO RUN SCORE MOTOR.
PULSES REPLAY 3-V. COIL, THRU IMPULSE CAN SWITCH B.
ENERGIZES COIN RELAY IN "6 PLAYS" ADJUSTMENT.
IN HOLD CIRCUIT TO THIS RELAY.

10¢

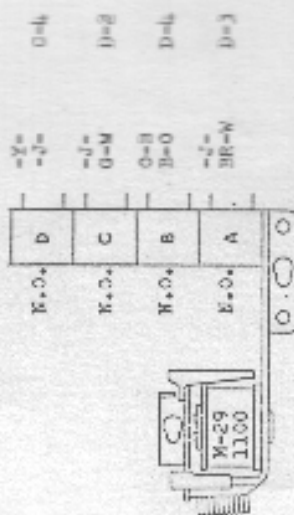
IS ENERGIZED BY 10¢ COIN SWITCH, IF 10¢ ADJUSTMENT JACK IS IN "2 PLAYS" OR "3 PLAYS" POSITION.



OPENS IN CIRCUIT TO KNOCKER COIL AND CLOSERS TO RUN SCORE MOTOR.
PULSES REPLAY 3-V. COIL, THRU IMPULSE CAN SWITCH B.
IN HOLD CIRCUIT TO THIS RELAY.

5¢

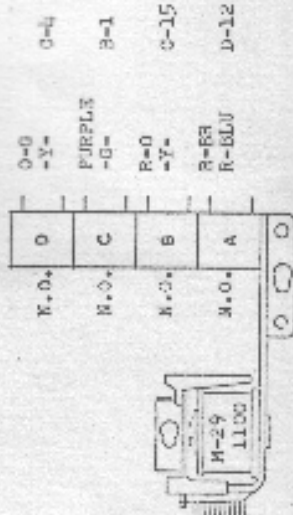
IS ENERGIZED BY 5¢ COIN SWITCH.



ENERGIZES ALTERNATOR UNIT 3-V. COIL.
ENERGIZES COIN RELAY, THRU SWITCH ON ALTERNATOR UNIT.
ENERGIZES LOCK RELAY.
IN HOLD CIRCUIT TO THIS RELAY.

10 TO ACE RESET

IS ENERGIZED, AT INDEX CAN SWITCH C, BY A SERIES CIRCUIT THRU SWITCHES OF 10 RELAY, J RELAY, Q RELAY, K RELAY AND A RELAY.

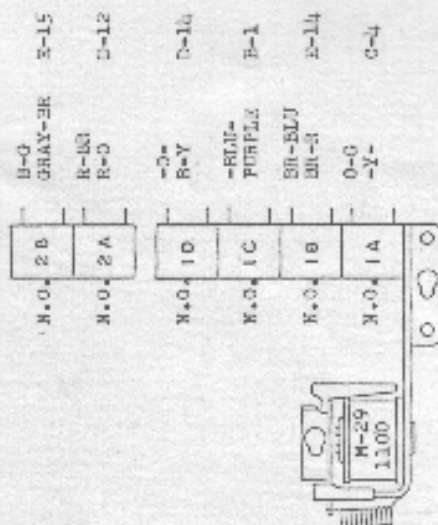


RESETS SCORE MONITOR.
ENERGIZES 10 TO ACE RELAY BANK RESET COIL, THRU SCORE MOTOR CAN SWITCH 1B.
IN CIRCUIT TO ENERGIZE SET-UP RELAY AND SPECIAL RELAY.
IN HOLD CIRCUIT TO THIS RELAY.

LOCATED ON PLAYFIELD

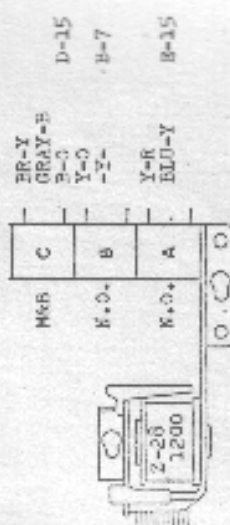
I TO 9 RESET

IS ENERGIZED, AT INDEX CAM SWITCH 0, BY A SERIES CIRCUIT THRU SWITCHES ON NO. 1 THRU NO. 9 RELAYS.



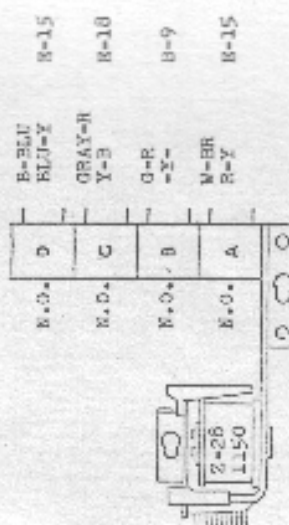
SPECIAL

IS ENERGIZED, AT CAM SWITCH 29, THRU 10 TO ACE RESET RELAY AND SET-UP RELAY.



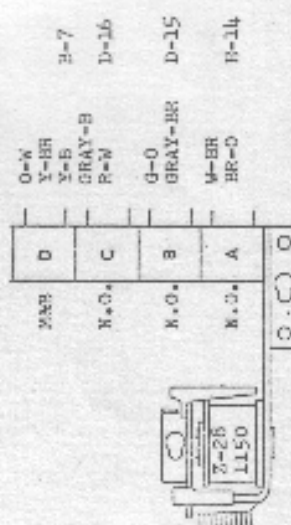
SET-UP

IS ENERGIZED, AT CAM SWITCH 14, THRU SWITCH ON 10 TO ACE RESET RELAY.



TRIPLE BONUS

IS ENERGIZED, AT CAM SWITCH 3C, BY SWITCHES ON 1 TO 9 RESET RELAY AND DOUBLE BONUS RELAY.



ENERGIZES REPLAY S.U. COIL, THRU SWITCH 9 ON TRIPLE BONUS RELAY.

IN HOLD CIRCUIT TO THIS RELAY.

ENERGIZES TRIPLE BONUS RELAY, THRU SWITCH 0 ON DOUBLE BONUS RELAY.

ENERGIZES 1 TO 9 RELAY BANK RESET COIL, THRU SCORE MOTOR CAM SWITCH 3A.

ENERGIZES DOUBLE BONUS RELAY, THRU SCORE MOTOR CAM SWITCH 4A.

RUNS SCORE MOTOR.

OPENS IN CIRCUIT TO 1,000 POINT RELAY AND CLOSSES TO REPLAY S.U. COIL ON 5,000 RELAY.

TO "RIGHT SIDE ROLLOVER" LITE.

IN HOLD CIRCUIT TO THIS RELAY.

ENERGIZES SPECIAL RELAY, THRU SWITCH 8 ON "10 TO ACE ROLLOVER RELAY".

ENERGIZES EXTRA BALL RELAY, THRU RIGHT BOTTOM ROLLOVER SWITCH.

IN SERIES WITH SWITCH C ON EXTRA BALL RELAY.

HOLD CIRCUIT TO THIS RELAY, THRU SWITCH ON OUTROLL RELAY.

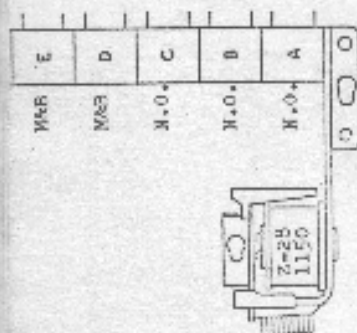
OPENS IN CIRCUIT TO "DOUBLE BONUS" LITE AND CLOSSES TO "TRIPLE BONUS" LITE.

IN CIRCUIT TO 1,000 POINT RELAY, THRU SWITCH 10 ON BONUS RELAY.

IN SERIES WITH SWITCH 2B ON 1 TO 9 RESET RELAY.

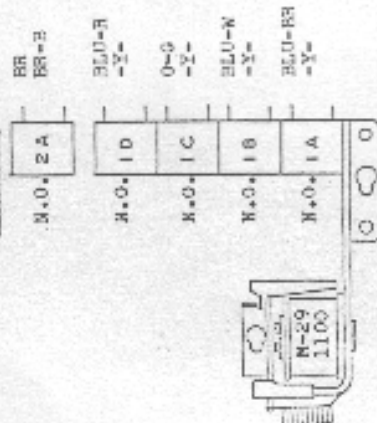
HOLD CIRCUIT TO THIS RELAY, THRU SWITCH ON OUTROLL RELAY.

IS ENERGIZED BY CAM SWITCH 4A, THRU
SWITCH ON 1 TO 9 RESET RELAY.



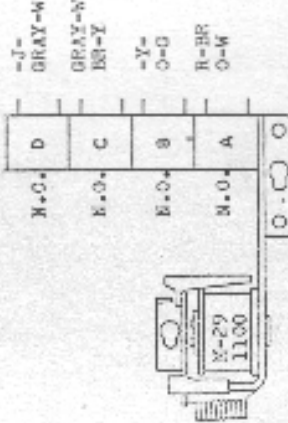
BONUS

IS ENGAGED, DURING RESET CYCLE, BY SCORING INDEX CAM SWITCH D, THRU SWITCH ON RESET RELAY.



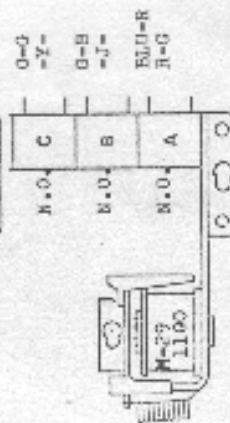
5000

IS ENERGIZED, ONLY IN "EXTRA BALL" POSITION, BY RIGHT SIDE ROLLOVER SWITCH, THROUGH SPECIAL RELAY--ALSO BY TRIPLE BONUS RELAY, THEN 1 TO 4 BONUS RELAY.



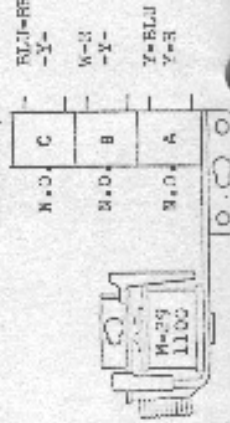
50

ITS REFERENCE BY NO. 1 THIRD NO. 9 HOLL-
OVER BUTTON SWITCHES.



ADVANCE

IS PULSED BY LEFT OR RIGHT TOP ROLL-OVER SWITCHES, LEFT OR RIGHT TOP TARGET SWITCHES, OR LEFT SIDE TARGET SWITCH.



IN CIRCUIT TO BONUS UNIT RESET COIL, THRU SWITCH 2D ON BONUS RELAY.

IN CIRCUIT TO 1,000 POINT RELAY, THRU SWITCH 12 ON BOARD RELAY.

ENERGIZES TRIPLEX BONUS HILAY, THRU SWITCH ON 1 TO 9 HILAY
HILAY.

1738075 WITH SWITCH D ON TRIPLE POINT RELAY.

WOULD RETURN TO THIS RELAY, THRU SWITCH ON CITHOLE RELAY.

WAS ADJUSTED TO TWO RELAY. WITH ZERO SWING ON POWER UNIT.

IN SPRINGS WITH SWITCH B ON DOUBLE BONDS RELAY.

STILES SCALE NO. 705.

IN CIRCUITS WITH SWITCH D ON DOUBLE BONUS RELAY---ALSO
SWITCH C ON TRIPLE BONUS RM.

IF HOLD CIRCUIT TO RESET RELAY.

IN STRIPS WITH SWITCH B ON 50 POINT RELAY.

PULSES 1,000 POINT RELAY. THRU IMPULSE CAN SWITCH B.

RUDIS SCORE MOTOR.

IN HOLD CIRCUIT TO THIS RELAY.

RIMS SCREW MOTOR.

IN CIRCUIT TO PULSE 10 POINT RELAY, THIRD SWITCH D ON 5.000 RELAY.

WELD CIRCUITS TO THIS RELAY. THRU SCORE MOTOR CAM SWITCH 5B.

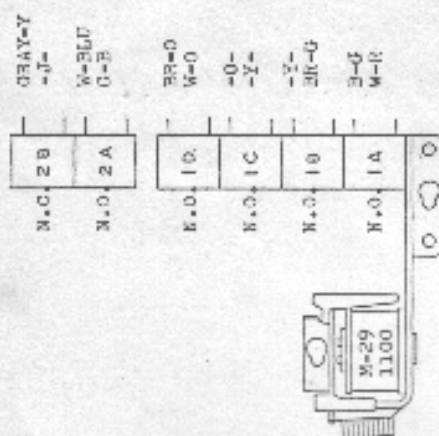
THE UNIVERSITY OF MICHIGAN LIBRARY

PITTSBURGH, 100 POINT RELAY.

HOLD CIRCUIT TO THIS RELAY, THRU END-OF-STROKE SWITCH ON
BOKS UNIT.

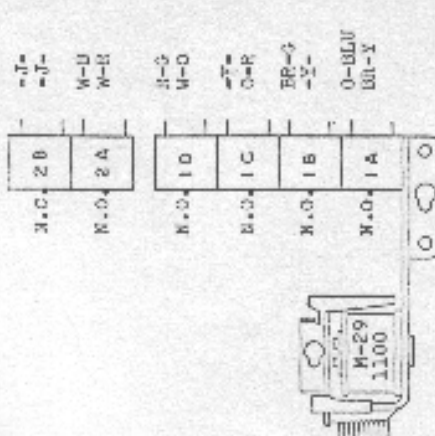
10 POINT

IS PULSED BY (2) KICKER SWITCHES, 50 POINT RELAY, OR 10 THRU ACE TARGET SWITCHES.



100 POINT

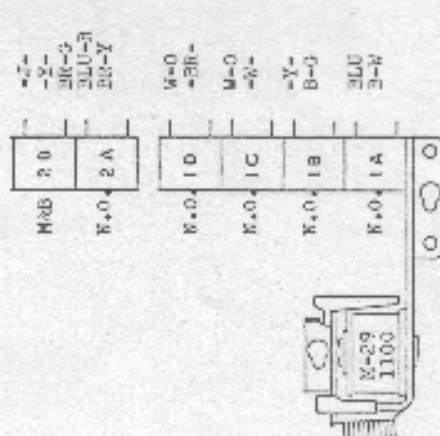
IS PULSED BY (1) JET BUMPER SWITCHES OR BY ADVANCE RELAY.



1,000 POINT

IS PULSED BY:

1. TOP ROLLOVER BUTTON SWITCH.
2. SIDE TARGET SWITCH.
3. 5000 RELAY.
4. (1) BOTTOM ROLLOVER SWITCHES.
5. RIGHT SIDE ROLLOVER SWITCH, THRU SPECIAL RELAY.
6. BONUS RELAY, THRU DOUBLE BONUS OR TRIPLE BONUS RELAYS.



IN HOLD CIRCUIT TO EXTRA BALL RELAY.

IN HOLD CIRCUIT TO THIS RELAY.

PULSES 10 POINT DRUM UNITS, THRU PLAYER UNIT DISC.

REMOVES NUMBER MATCH S.U. COIL AND HELIX CHIME COIL.

IN SERIES WITH SWITCH D OF EXTRA BALL RELAY.

PULSES 100 POINT RELAY, THRU 9TH POSITION SWITCHES ON 10 POINT DRUM UNITS.

IN SERIES WITH SWITCH 2B ON 10 POINT RELAY.

IN HOLD CIRCUIT TO THIS RELAY.

PULSES 100 POINT DRUM UNITS, THRU PLAYER UNIT DISC.

PULSES SMALL CHIME COIL.

IN SERIES WITH SWITCH D OF EXTRA BALL RELAY.

PULSES 1,000 POINT RELAY, THRU 9TH POSITION SWITCH ON 100 POINT DRUM UNITS.

OPENS IN SERIES WITH SWITCH 2B ON 100 POINT RELAY, AND CLOSING IN SERIES WITH SWITCH D OF EXTRA BALL RELAY.

IN HOLD CIRCUIT TO THIS RELAY.

PULSES 10,000 POINT DRUM UNITS, THRU 9TH POSITION SWITCHES ON 1,000 POINT DRUM UNITS.

PULSES 1,000 POINT DRUM UNITS, THRU PLAYER UNIT DISC.

PULSES LARGE CHIME COIL.

IN HI-SCORE CIRCUIT TO REPLAY S.U. COIL OR EXTRA BALL RELAY.

1 1/2 RESET

IS PULSED BY "FORWARD IMPULSE CAM" SWITCH A, THRU SWITCH 2A ON RESET RELAY.

N.O. 2D
N.O. 2C
N.O. 2B
N.O. 2A

GRAY-BLU
-Y-

D-9

2ND PLAYER 10 POINT DRUM UNIT.

R-O

D-10

2ND PLAYER 1,000 POINT DRUM UNIT.

O-B

D-10

1ST PLAYER 100 POINT DRUM UNIT.

-Y-

D-9

1ST PLAYER 10 POINT DRUM UNIT.

BR-O

D-11

2ND PLAYER 10,000 POINT DRUM UNIT.

-Y-

D-11

1ST PLAYER 10,000 POINT DRUM UNIT.

R-B

D-10

2ND PLAYER 100 POINT DRUM UNIT.

-Y-

D-10

1ST PLAYER 1,000 POINT DRUM UNIT.

BLU-W

D-10

4TH PLAYER 100 POINT DRUM UNIT.

-Y-

D-10

3RD PLAYER 100 POINT DRUM UNIT.

BLU-W

D-10

4TH PLAYER 100 POINT DRUM UNIT.

-Y-

D-10

3RD PLAYER 100 POINT DRUM UNIT.

BR-O

D-11

2ND PLAYER 10,000 POINT DRUM UNIT.

-Y-

D-11

1ST PLAYER 10,000 POINT DRUM UNIT.

R-B

D-10

2ND PLAYER 100 POINT DRUM UNIT.

-Y-

D-10

1ST PLAYER 1,000 POINT DRUM UNIT.



3 1/4 RESET

IS PULSED BY IMPULSE CAM SWITCH A, THRU SWITCH 2A ON RESET RELAY.

N.O. 2D
N.O. 2C
N.O. 2B
N.O. 2A

GRAY-R
-Y-

D-10

4TH PLAYER 100 POINT DRUM UNIT.

BLU-W

D-10

3RD PLAYER 100 POINT DRUM UNIT.

-Y-

D-10

4TH PLAYER 100 POINT DRUM UNIT.

O-B

D-10

1ST PLAYER 100 POINT DRUM UNIT.

-Y-

D-9

3RD PLAYER 10 POINT DRUM UNIT.

BLU-W

D-11

4TH PLAYER 1,000 POINT DRUM UNIT.

-Y-

D-11

4TH PLAYER 10,000 POINT DRUM UNIT.

BR-O

D-11

3RD PLAYER 10,000 POINT DRUM UNIT.

-Y-

D-11

3RD PLAYER 1,000 POINT DRUM UNIT.

BLU-W

D-11

3RD PLAYER 1,000 POINT DRUM UNIT.

-Y-

D-11

3RD PLAYER 1,000 POINT DRUM UNIT.

BR-O

D-11

3RD PLAYER 1,000 POINT DRUM UNIT.

-Y-

D-11

3RD PLAYER 1,000 POINT DRUM UNIT.



THESE SWITCHES PULSE THE INDICATED DRUM UNIT, THRU ZERO SWITCH ON THAT UNIT.

THESE SWITCHES PULSE THE INDICATED DRUM UNIT, THRU ZERO SWITCH ON THAT UNIT.