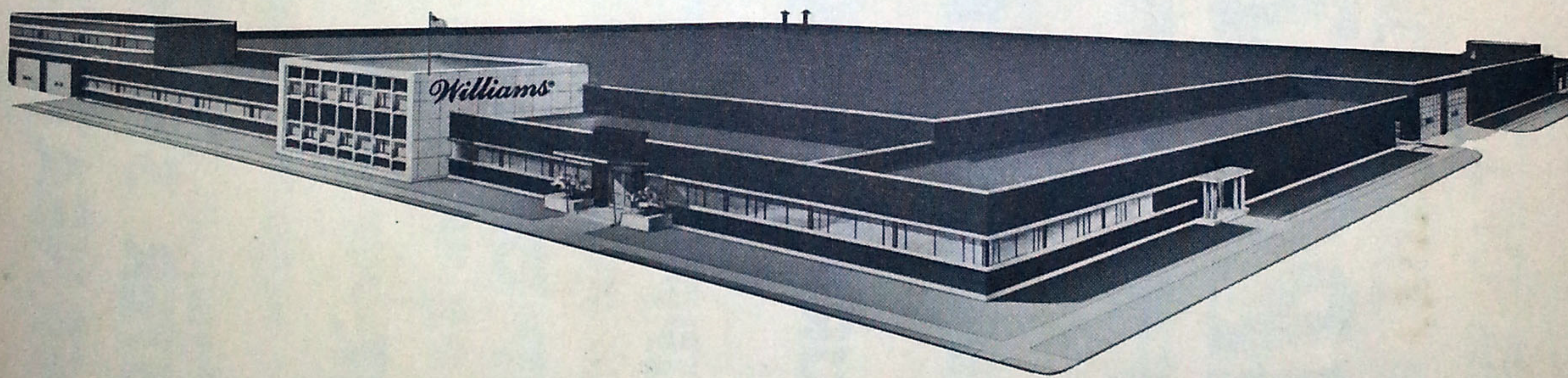


Instruction Manual

for

SEVEN - UP



Williams[®] ELECTRONICS, INC.
SUBSIDIARY OF THE SEEBURG CORPORATION

3401 N. California Ave.
Phone 267-2240

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

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.

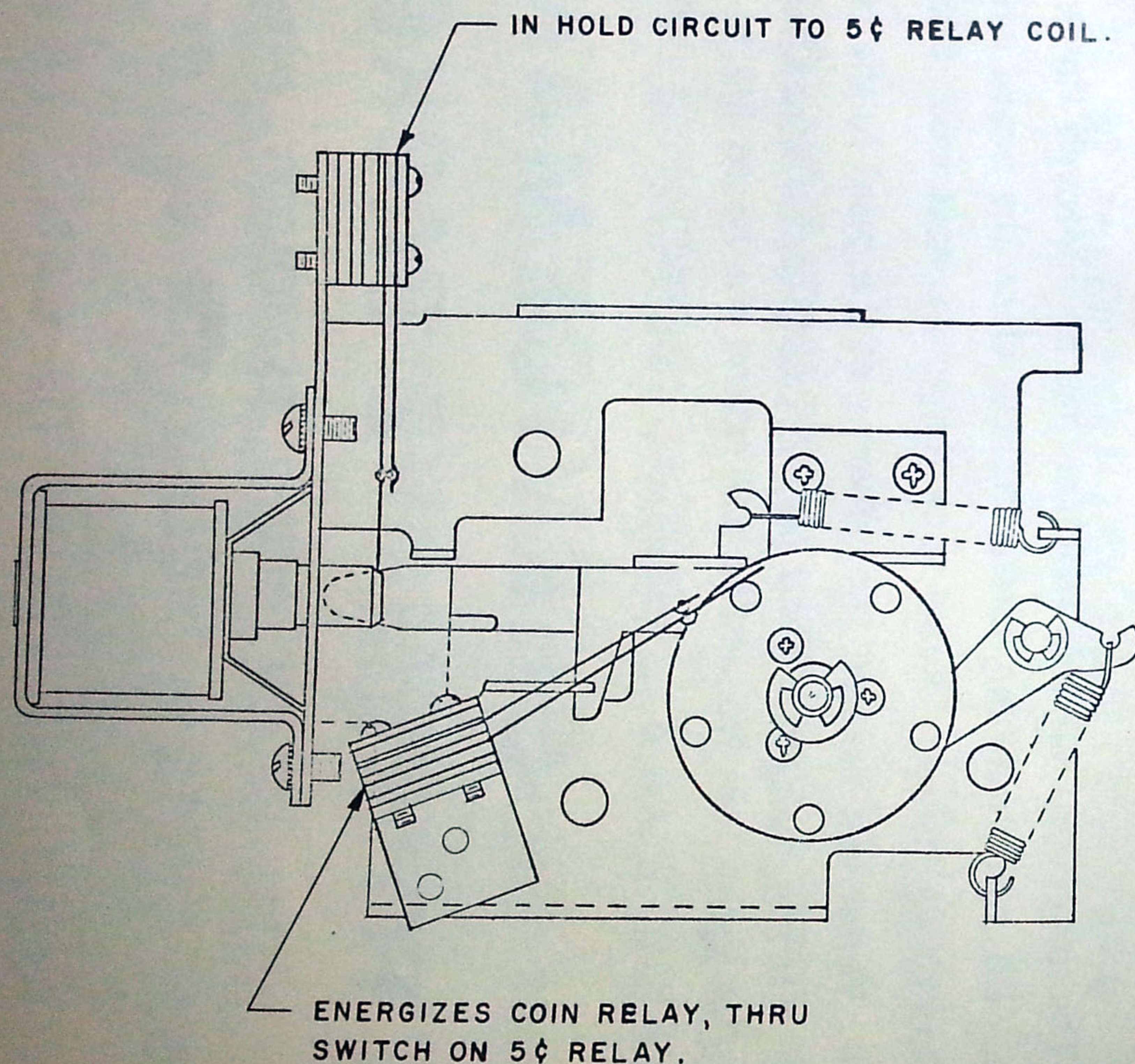
SERVICEMAN TO REMOVE BACKGLASS:

- **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

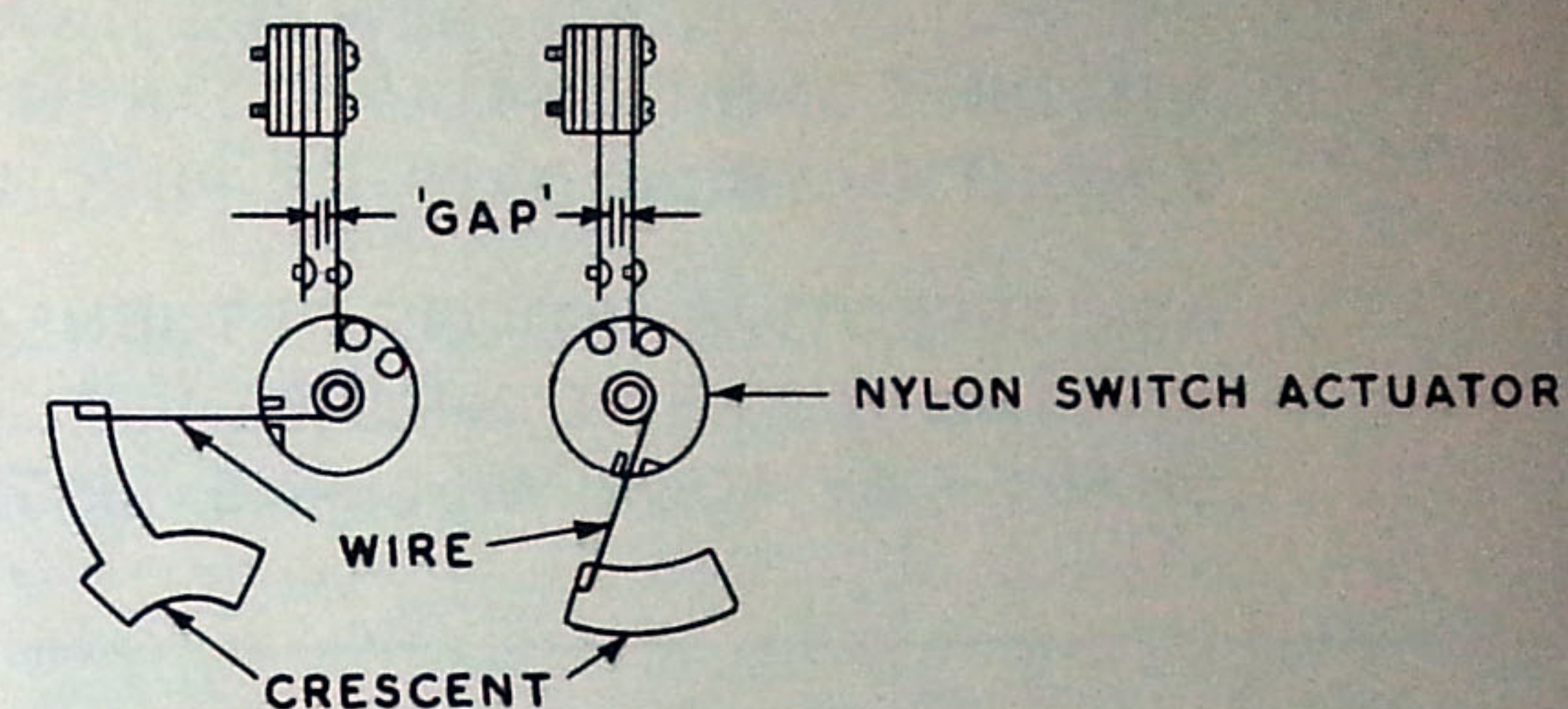
LOCATED ON MECHANISM PANEL.

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



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.

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	
BALL COUNT	C-6932	C-6520	A-6402-5	
MAN ADVANCE	C-6417	C-6521	A-6403	
ADVANCE	C-6417	C-6520	A-6402-4	
NO. MATCH	C-6879	C-6520	A-6401	14A-7805 (60 CYCLE)
O-9	A-7195	A-6294	3C-7272	14A-7806 (50 CYCLE)
TENS	-----	-----	3C-7272	
HUNDREDS	A-7195	A-6294	3C-7272	
THOUSANDS	A-7195	A-6294	3C-7272	
ALTERNATOR	-----	-----	3C-7272	

"SEVEN UP" COIL CHART

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
14 A 7805	SCORE MOTOR - 60 CYCLE	MECH. PANEL
14 A 7806	SCORE MOTOR - 50 CYCLE	MECH. PANEL
15 A 6771	TRANSFORMER - 60 CYCLE	MECH. PANEL
15 A 6782	TRANSFORMER - 50 CYCLE	MECH. PANEL
B 6396	24 VOLT METER	MECH. PANEL

SOLENOID COILS

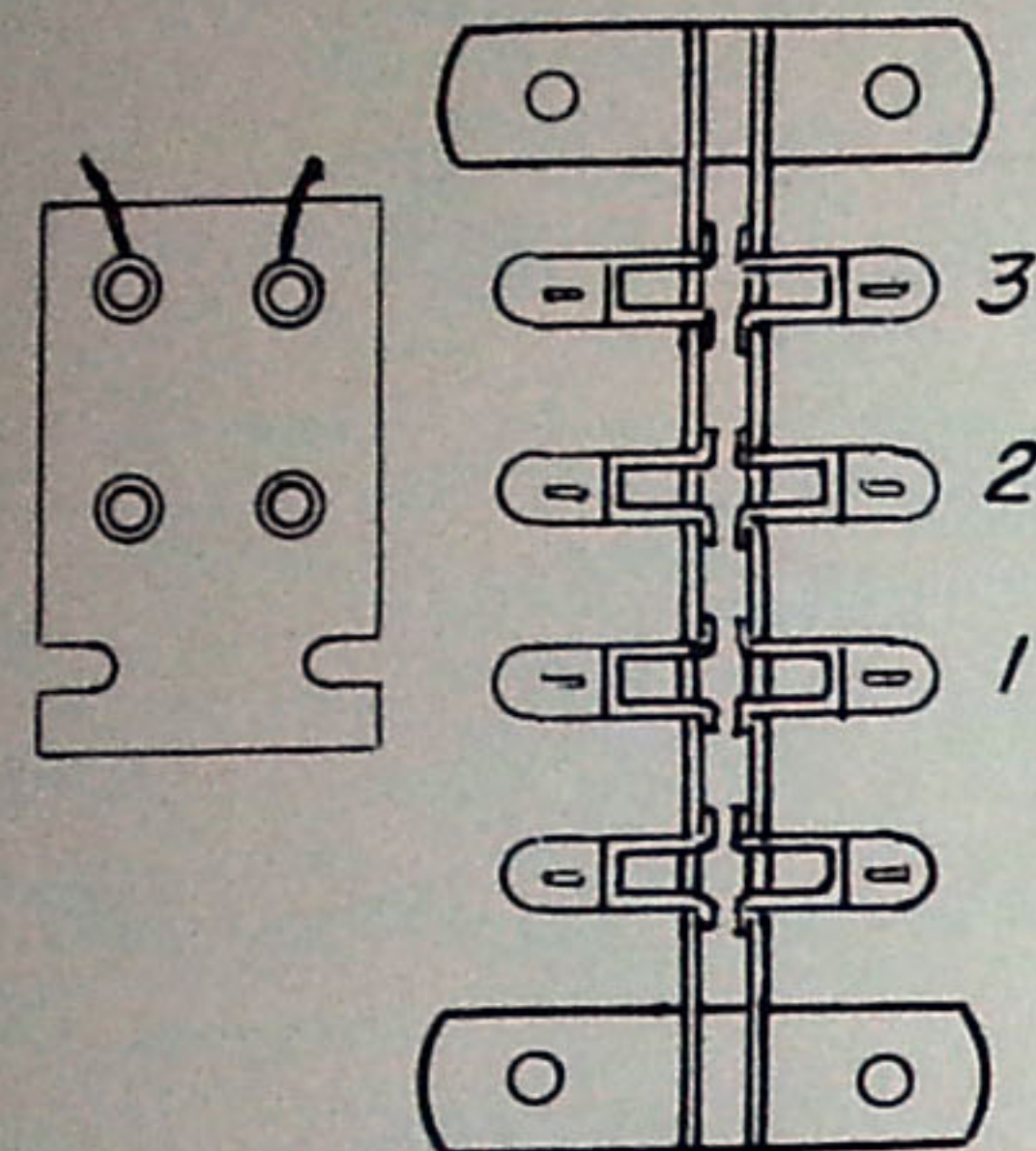
A 22-550	MAN ADVANCE UNIT STEP UP	INSERT
	MATCH UNIT STEP UP	INSERT
	BALL COUNT UNIT STEP UP	INSERT
	BALL RELEASE	PLAYFIELD
	ADVANCE UNIT STEP UP	PLAYFIELD
A 23-600	REPLAY UNIT STEP UP	INSERT
A 2-23-750	KNOCKER	CABINET
	LARGE BELL	CABINET
B 26-800	ALTERNATOR UNIT	MECH. PANEL
	BALL COUNT UNIT RESET	INSERT
	SCORE DRUM UNITS ... (4 req'd.)	INSERT
	REPLAY UNIT RESET	INSERT
	ADVANCE UNIT RESET	PLAYFIELD
D 24-1400	RELAY BANK RESET COIL	PLAYFIELD
G 22-550	JET BUMPERS ... (4 req'd.)	PLAYFIELD
	CENTER TARGET	PLAYFIELD
G 23-750	AUTO KICKERS ... (2 req'd.)	PLAYFIELD
	DOWN L POST	PLAYFIELD
	DOWN R POST	PLAYFIELD
	DOWN CENTER POST	PLAYFIELD
FL 21-375/ 28-400	FLIPPERS ... (4 req'd.)	PLAYFIELD

RELAY COILS

M 23-250	SPECIAL RELAY	PLAYFIELD
M1-31-1500	COIN LOCKOUT	DOOR
M 29-1000	L POST TRIP	PLAYFIELD
	R POST TRIP	PLAYFIELD
	CENTER POST TRIP	PLAYFIELD
M 29-1100	5¢ RELAY	MECH. PANEL
	10¢ RELAY	MECH. PANEL
	25¢ RELAY	MECH. PANEL
	1 POINT RELAY	INSERT
	10 POINT RELAY	INSERT
	100 POINT RELAY	INSERT
	NO. 1 BUMPER RELAY	PLAYFIELD
	NO. 2 BUMPER RELAY	PLAYFIELD
	NO. 3 BUMPER RELAY	PLAYFIELD
	NO. 4 BUMPER RELAY	PLAYFIELD
	MAN ADVANCE RELAY	PLAYFIELD
	CENTER POST RELAY	PLAYFIELD
	SIDE POST RELAY	PLAYFIELD
Z 27-1000	500 RELAY	MECH. PANEL
	300 RELAY	MECH. PANEL
	CENTER TARGET RELAY	MECH. PANEL
	COIN RELAY	MECH. PANEL
	OUTSOLE RELAY	MECH. PANEL
	RESET RELAY	MECH. PANEL
Z 28-1150	LOCK RELAY	MECH. PANEL
	BALL INDEX RELAY	MECH. PANEL
XM 27-675	METER COIL	B 6396
S 27-500	RELAY BANK COILS ... (7 req'd.)	PLAYFIELD

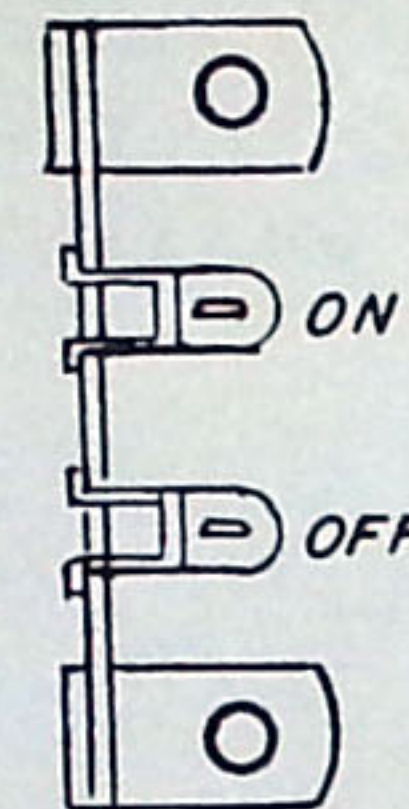
ADJUSTMENTS ON MECHANISM PANEL

10¢ Adjustment



PROVIDES
1, 2 OR
3 PLAYS
FOR ONE
COIN.

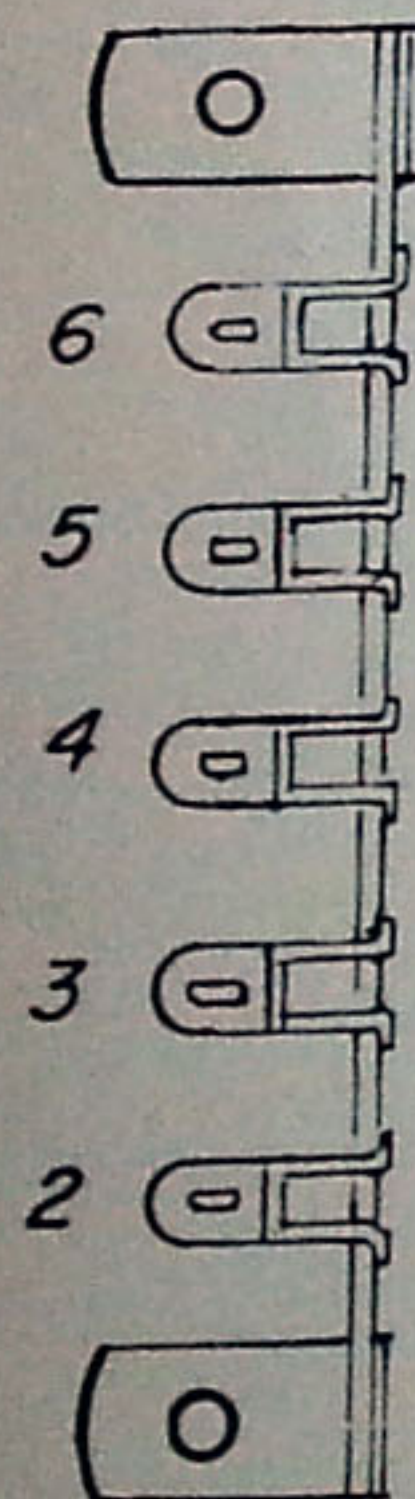
Motor Service Jack



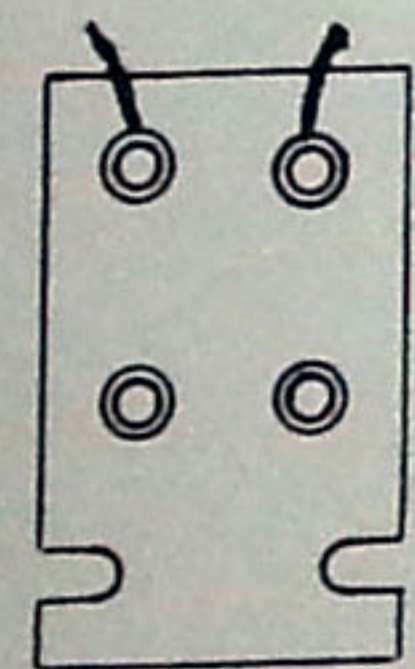
INSERT PHONE TIP IN
'OFF' POSITION - CAMS
CAN BE TURNED BY
HAND TO CHECK

ADJUSTMENT OF
SWITCHES.

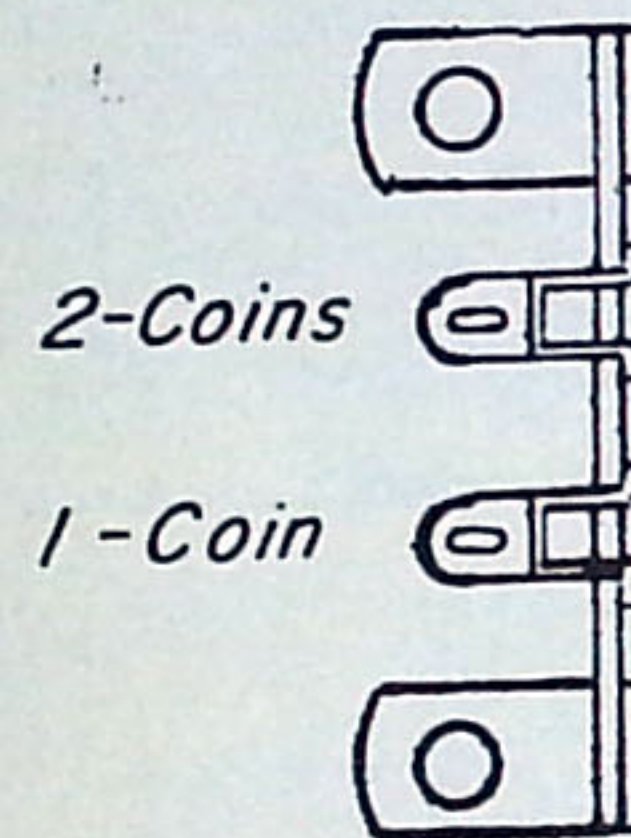
25¢ Adjustment



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



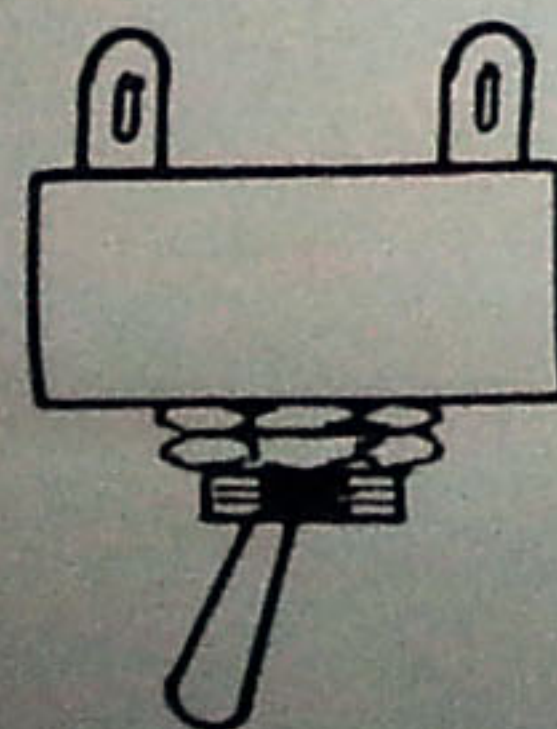
5¢ Adjustment



IN "2 COINS FOR 1
PLAY", CIRCUIT TO
COIN RELAY PASSES
THRU
SWITCH
ON ALTER-
NATOR
UNIT.

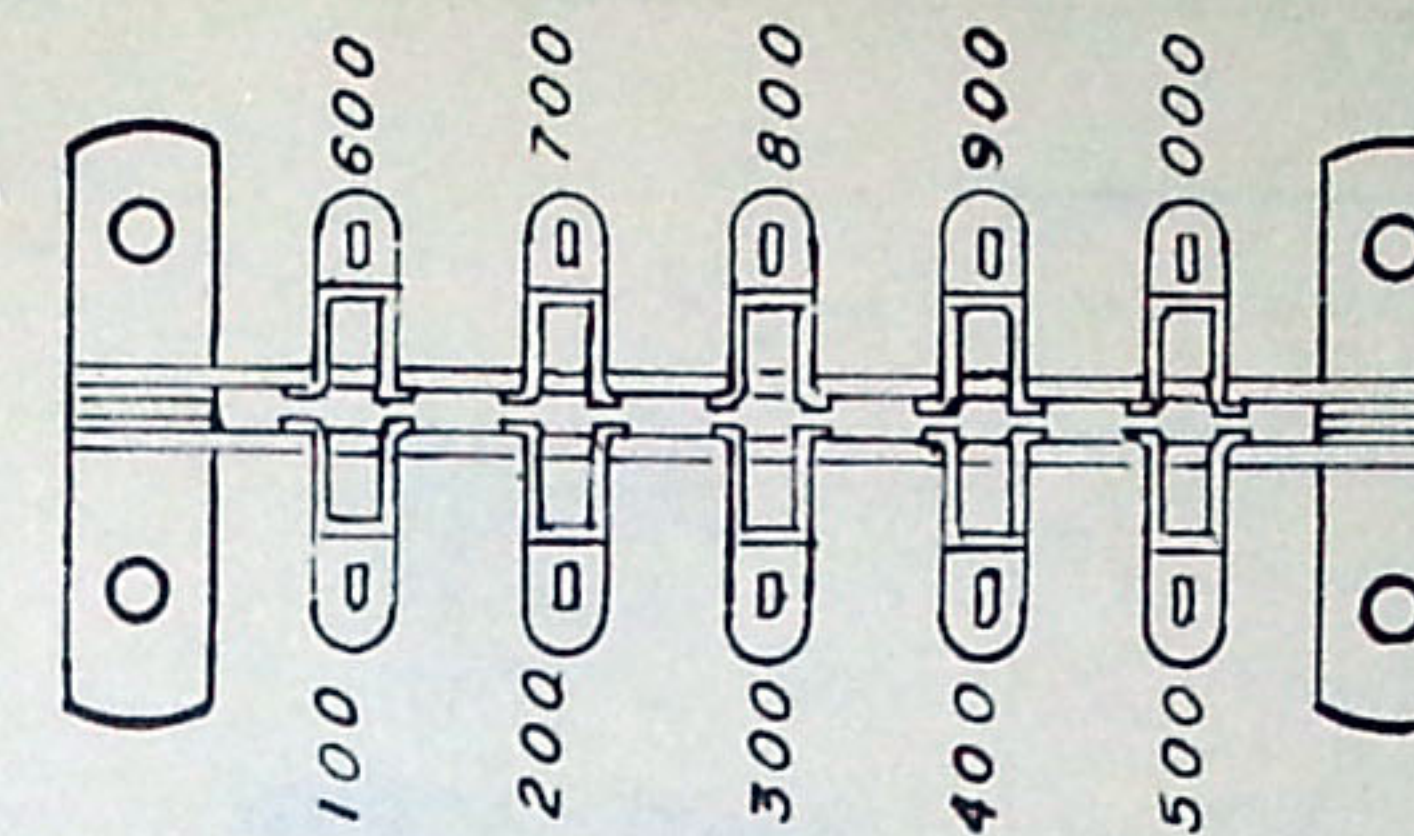
Located under front of Cabinet

Master On-Off Switch



CONTROLS POWER TO
TRANSFORMER

ADJUSTMENTS IN BACKBOX



Hi-Score Adjustment

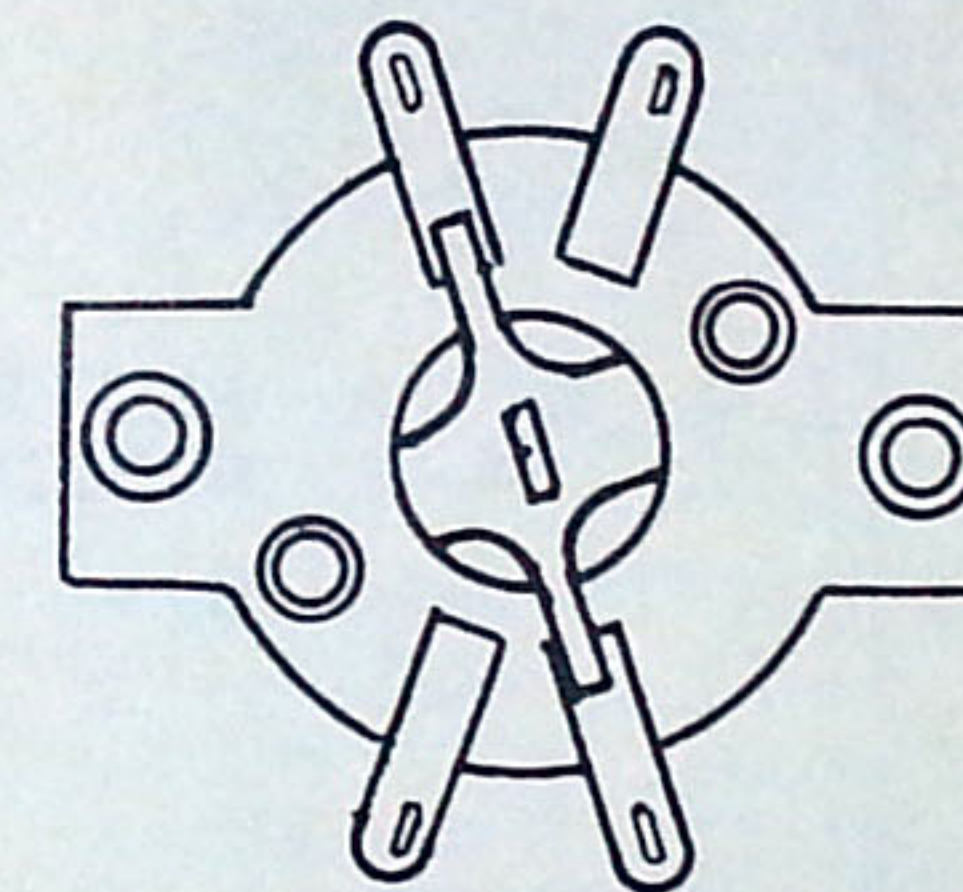
Insert plugs into 10 Point Female at
desired positions.

Examples:

Yellow wire into 300 position scores at 3300.
Yellow wire into 000 position scores at 4000.

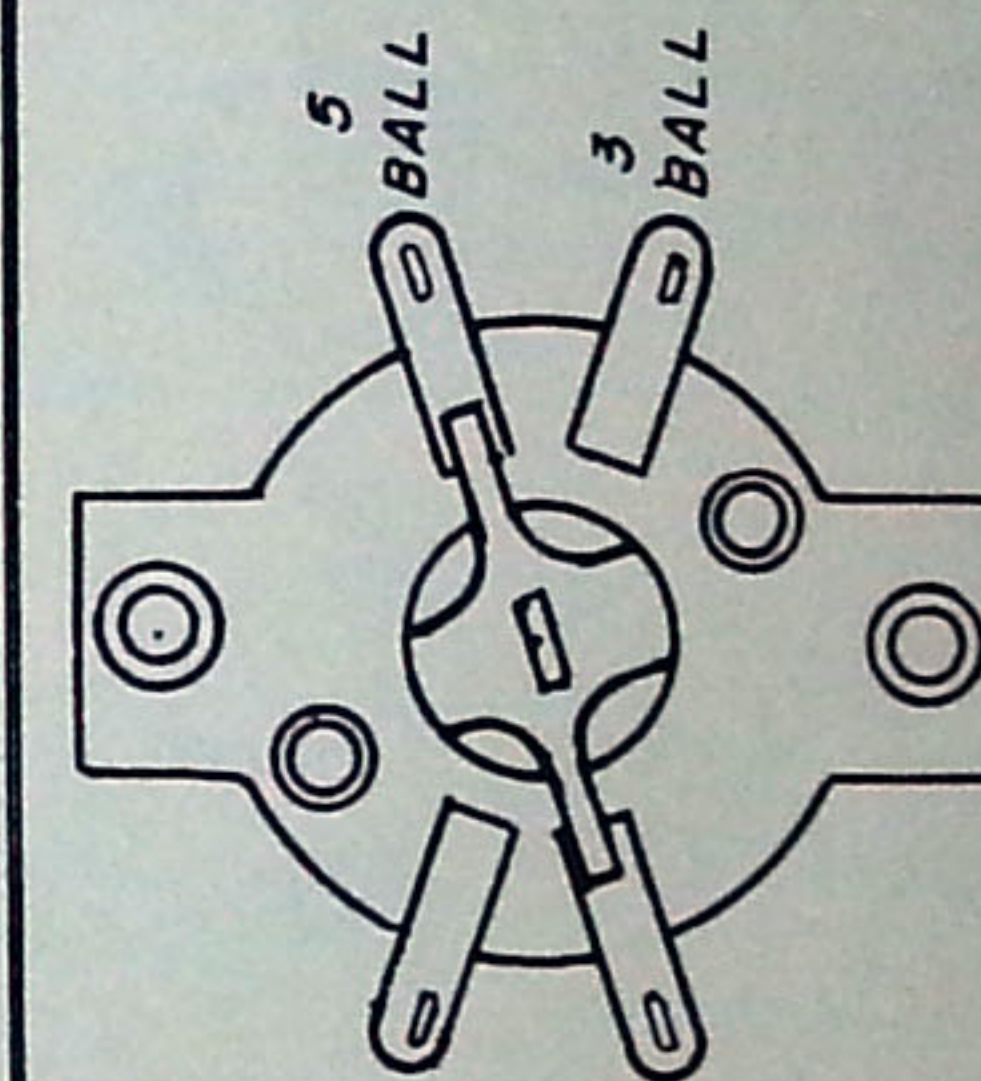
	-RED-	(1100 to 2000)
	-BLUE-	(2100 to 3000)
	-YELLOW-	(3100 to 4000)
	-GREEN-	(4100 to 5000)
	-WHITE-	(5100 to 6000)
	-BROWN-	(6100 to 7000)
	-ORANGE-	(7100 to 8000)
	-BLACK-	(8100 to 9000)

Lib. Cons.



Center Target Adjustment

IN LIBERAL POSITION, 1 TO 6 MUST
BE MADE THREE TIMES TO LITE #7
TARGET FOR SPECIAL. IN CONSER-
VATIVE POSITION, 1 TO 6 MUST BE
MADE FOUR TIMES.

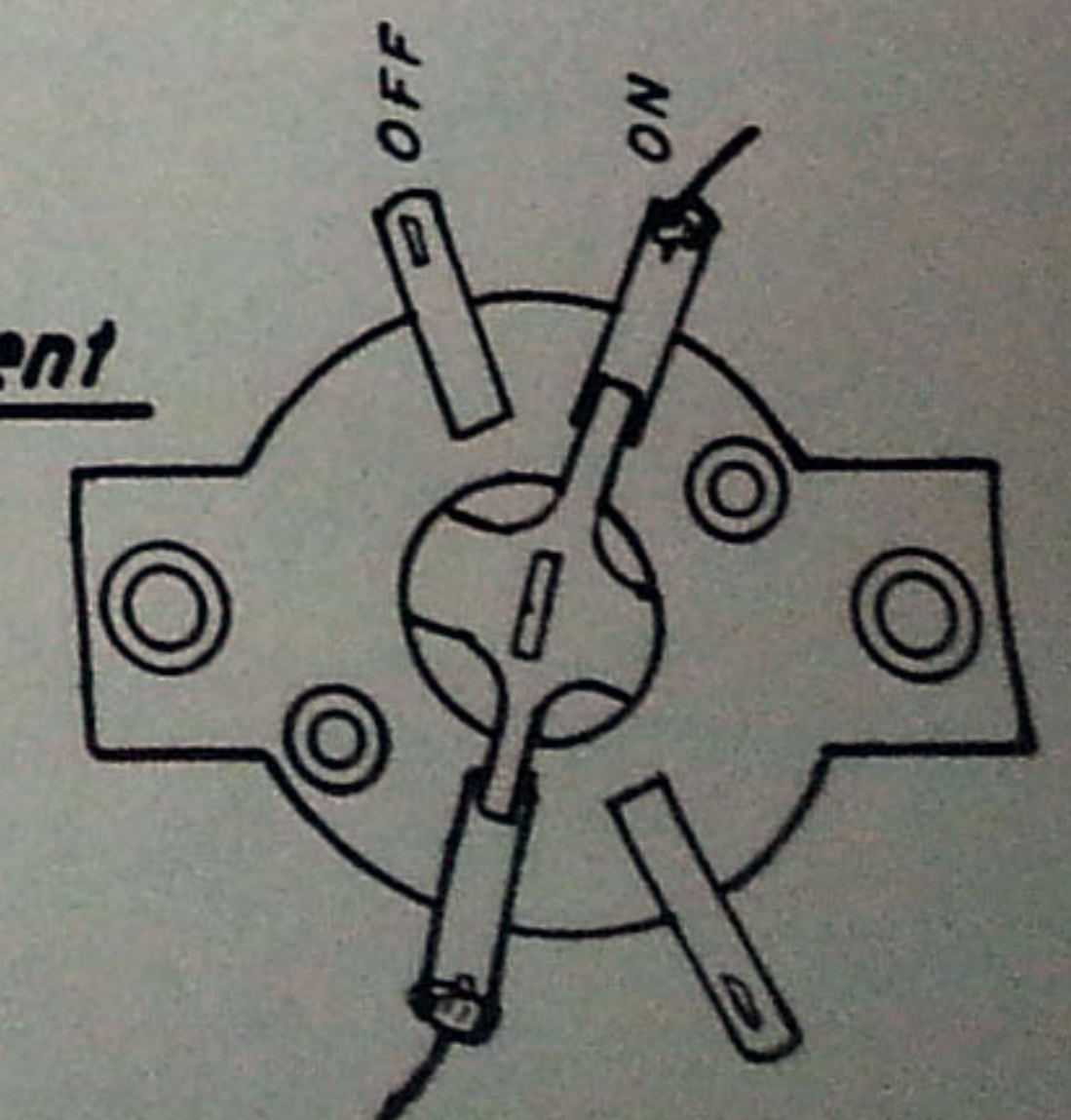


No. of Balls Adjustment

This switch changes 3 Ball to 5 Ball
play, or vice versa.

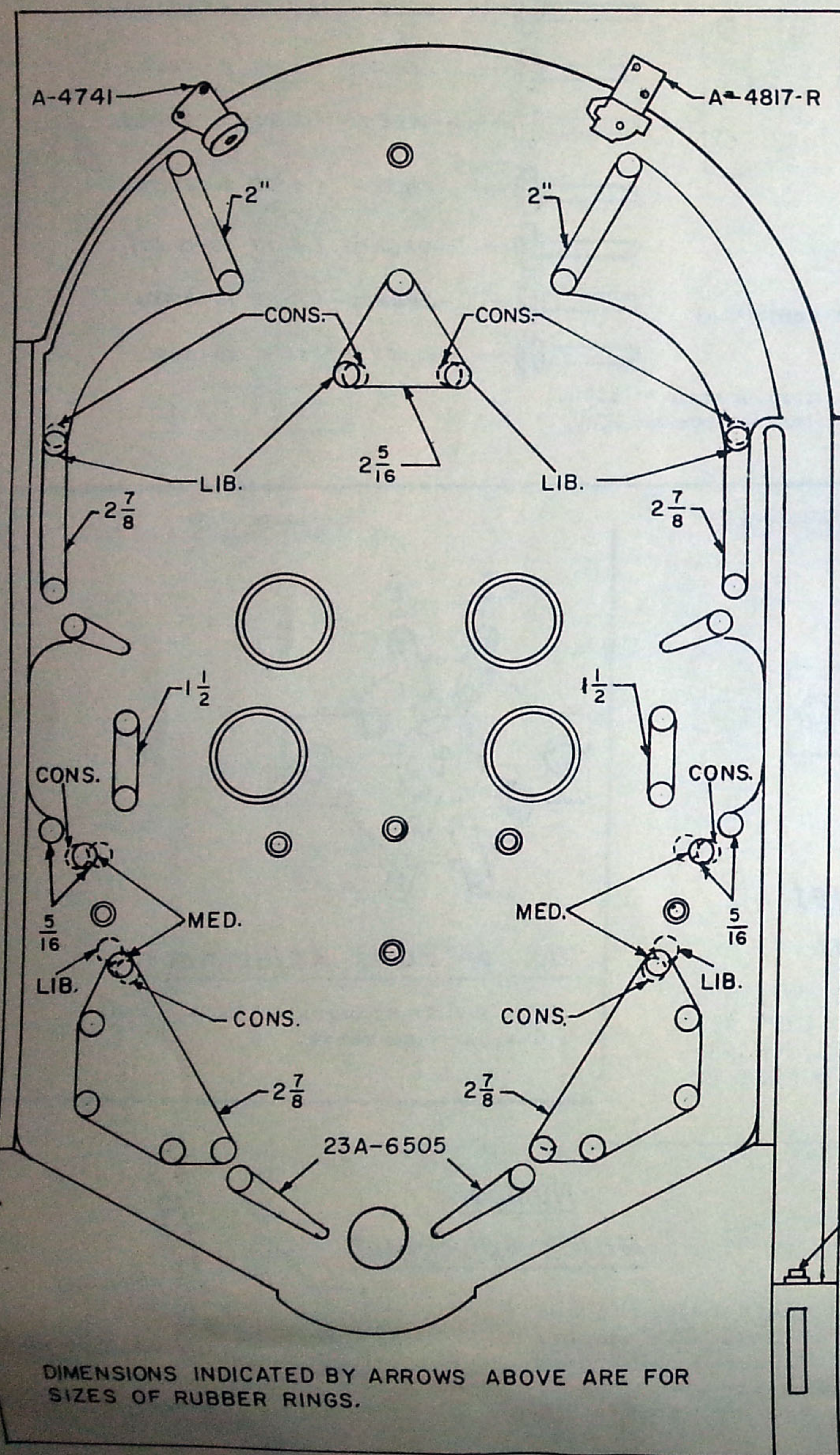
Number Match Adjustment

In "ON" position, number match lite will
appear when game is over. This number
will match the last number in point score,
on the average, once every ten games.
In "OFF" position, Number Match is
inoperative.



"SEVEN UP" — POST ADJUSTMENT SHEET

TO MAKE GAME MORE "CONSERVATIVE" OR "LIBERAL"— MOVE POSTS 3/16" AS SHOWN IN SKETCH BELOW. SPOTTING HOLES ARE PROVIDED AND CAN BE SEEN ON REMOVAL OF POSTS.



ABBREVIATIONS:

CONS.— CONSERVATIVE

LIB.— LIBERAL

MED.— MEDIUM

RUBBER RING NUMBERS:

23A-6300	5/16	I.D.
23A-6304	1-1/2	I.D.
23A-6305	2"	I.D.
23A-6306	2-5/16	I.D.
23A-6307	2-7/8	I.D.

A-4817-R— BALL GATE ASS'Y.
A-4741 REBOUND ASS'Y.

23A-6327 BALL SHOOTER
RUBBER TIP

DIMENSIONS INDICATED BY ARROWS ABOVE ARE FOR SIZES OF RUBBER RINGS.

"SEVEN-UP"

ADJUSTMENT SHEET

NO.1 THRU NO.6 RELAYS ON RELAY BANK ARE TRIPPED WHEN HITTING TOP TARGETS, TOP LEFT AND RIGHT STANDUP SWITCHES, OR LEFT AND RIGHT SIDE ROLLOVERS, AS INDICATED ON PLAY-FIELD. TRIPPING ALL (6) RELAYS WILL ENERGIZE 300 RELAY.

300 RELAY SCORES 300 POINTS AND RAISES NO.7 (CENTER) TARGET. HITTING CENTER TARGET SCORES 500 POINTS AND STEPS UP "ADVANCE" UNIT. WHEN ADVANCE UNIT MOVES 3 STEPS (IN LIBERAL POSITION), OR 4 STEPS (IN CONSERVATIVE POSITION), CENTER TARGET "SPECIAL" WILL LITE. HITTING CENTER TARGET, WHEN "SPECIAL" IS LIT, SCORES A REPLAY.

MAKING LEFT SIDE ROLLOVER, WHEN "A" IS LIT, WILL STEP UP THE "MAN ADVANCE" UNIT WHICH IN TURN, LITES UP THE LETTER "B". MAKING ROLLOVER BUTTON AT TOP OF PLAYFIELD, WHEN "B" IS LIT, WILL STEP UP "MAN ADVANCE" UNIT TO LITE LETTER "C" ETC.

MAKING RIGHT SIDE ROLLOVER, WHEN "E" IS LIT, ADVANCES SKIER ONE POSITION DOWN THE SLOPE ON BACK-GLASS. WHEN SKIER REACHES BOTTOM OF SLOPE, RIGHT SIDE ROLLOVER WILL LITE FOR "SPECIAL".

POWER TRANSFORMER:

LOCATED ON MECHANISM PANEL. IT IS EQUIPPED WITH A SECONDARY TAP. IF YOUR GAME IS ON LOCATION WITH EXTREMELY LOW LINE VOLTAGE, REMOVE LEAD FROM LUG MARKED 24 VOLTS AND SOLDER TO ALTERNATE LUG MARKED "HIGH". THIS WILL BOOST SECONDARY VOLTAGE APPROXIMATELY 2-3 VOLTS.

LEG LEVELERS:

ARE PROVIDED FOR TWO PURPOSES - 1ST TO LEVEL GAME ON LOCATION, 2ND TO INCREASE PITCH FOR GAME PERCENTAGING. IF IT IS DESIRED TO SPEED UP PLAY AND DECREASE SCORES, RAISE REAR LEG LEVELERS TO INCREASE PITCH.

SUGGESTED SCORE CARDS:

5 BALL PLAY ... #372-8

3 BALL PLAY ... #372-18

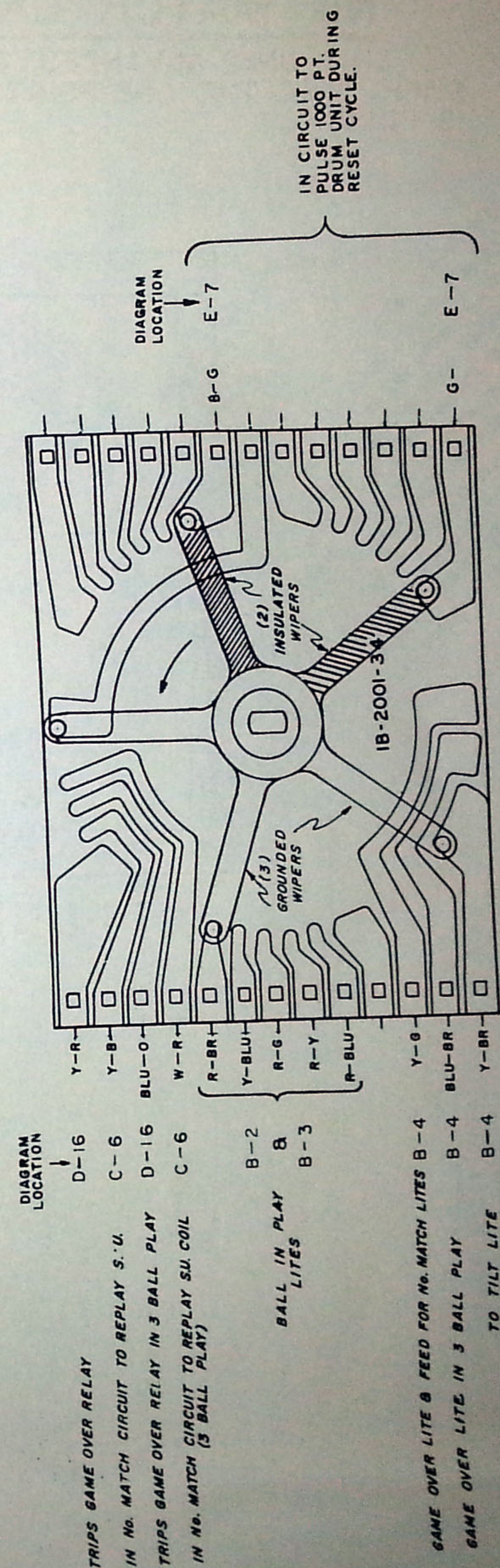
THIS UNIT ADVANCES ONE STEP EACH TIME THE ONE POINT RELAY IS PULSED.

In No Match Circuit
These Wires Come From
The 1-Pt. D.U. Disc.



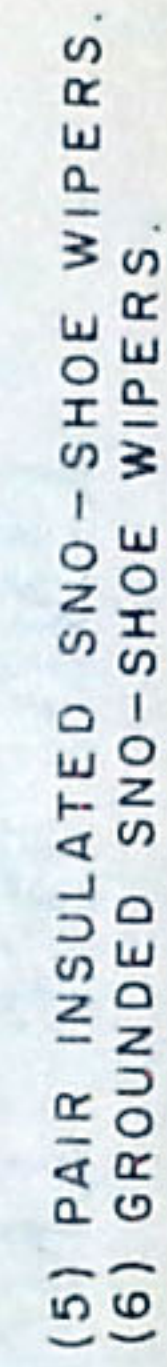
THIS UNIT RESETS AT THE START OF A NEW GAME. IT ADVANCES ONE STEP EACH TIME THE BALL LEAVES THE PLAYFIELD.

View looking at WIPER FINGER SIDE with wiper in ZERO OR RESET position



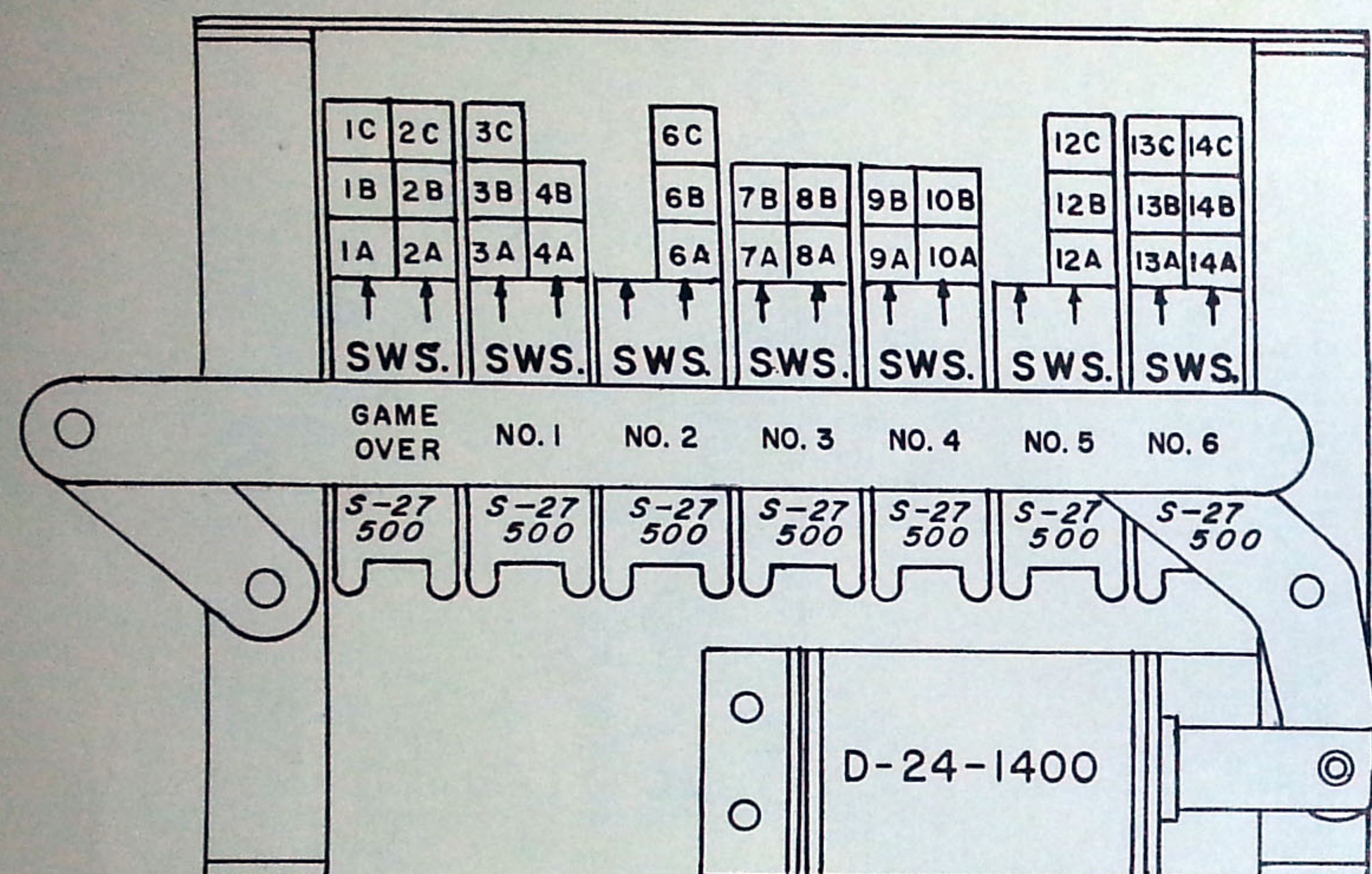
12

TO "E" ROLLOVER LITE
TO "D" ROLLOVER LITE
TO "C" ROLLOVER LITE
TO "B" ROLLOVER LITE
TO "A" ROLLOVER LITE
TO "MAN ADVANCE SWITCH"
TO "100 POINT RELAY"
TO "E" ROLLOVER SWITCH
TO "10" ROLLOVER SWITCH
TO "D" ROLLOVER SWITCH



楚

RELAY BANK SWS.

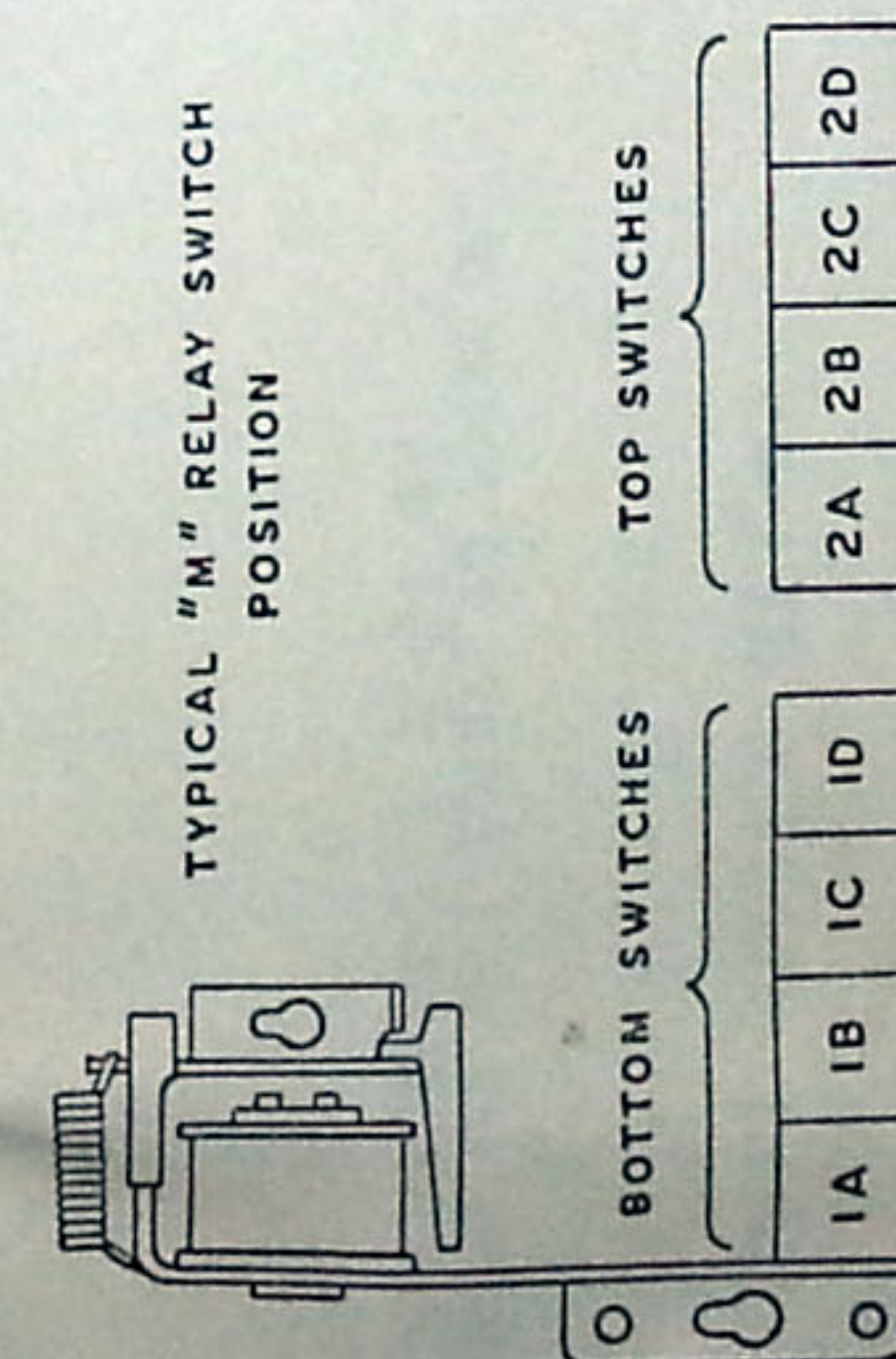


N.O. — NORMALLY OPEN SWITCH
N.C. — NORMALLY CLOSED SWITCH
M&B — MAKE AND BREAK SWITCH

RELAY	SW.	WIRE COLORS	DIAG. LOC.	TYPE	SWITCH OPERATIONS
GAME OVER	1C	BLU-Y-W -R-	F-9	N.C.	Opens circuit to playfield switches.
	1B	R-W O-B	E-8	N.O.	Energizes "Side Post" Relay.
	1A	G-W W-BR	E-3	N.O.	In circuit to Coin Relay, thru Replay Button Switch.
	2C	-GREY- GREY-BR	E-7	N.C.	In circuit to Replay S.U. Coil.
	2B	R-BLU R-B	E-9	N.O.	Energizes "Center Post" Relay.
	2A	GREY-R -BLU-	A-4	N.O.	To Tilt lite.

RELAY	SW.	WIRE COLORS	DIAG. LOC.	TYPE	SWITCH OPERATIONS
NO. 1	3C	O-BLU -Y- O-G	B-9	M&B	Opens in circuit to No.1 Target lite, and closes to Left Bottom Jet Bumper lite.
	3B	-J- BLU-R	D-11	N.C.	To No.1 Relay Coil, from Left Side Rollover Switch.
	3A	-G- -J-	C-11	N.O.	In series with Switch 6A on No.2 Relay.
	4B	-J- BLU-Y W-R	E-11	M&B	Closes in circuit to 10 Point Relay.
	4A	G-B -BR- W-R	E-14	M&B	Opens in circuit to 1 Point Relay and closes to 10 Point Relay.
NO. 2	6C	-J- BLU-W W-R	E-11	M&B	Closes in circuit to 10 Point Relay.
	6B	-Y- O-W	B-9	N.C.	To No.2 Target lite.
	6A	-J- -J-	D-11	N.O.	In series with Switch 7A on No.3 Relay.
NO. 3	7B	G-B W-B W-R	E-13	M&B	Opens in circuit to 1 Point Relay and closes to 10 Point Relay.
	7A	-J- -J-	D-11	N.O.	In series with Switch 9A on No.4 Relay.
	8B	-J- BLU-BR W-R	E-11	M&B	Closes in circuit to 10 Point Relay.
	8A	O-B -Y- B-R	B-10	M&B	Opens in circuit to No.3 Target lite and closes to Left Top Jet Bumper lite.
NO. 4	9B	G-B W-GREY W-R	E-14	M&B	Opens in circuit to 1 Point Relay and closes to 10 Point Relay.
	9A	-J- -J-	E-11	N.O.	In series with Switch 12A on No.5 Relay.

RELAY	SW.	WIRE COLORS	DIAG. LOC.	TYPE	SWITCH OPERATIONS
NO. 4	10B	-J- BLU-O W-R	E-12	M&B	Closes in circuit to 10 Point Relay.
	10A	B-BLU -Y- B-Y	B-10	M&B	Opens in circuit to No. 4 Target lite and closes to Right Top Jet Bumper lite
NO. 5	12C	-J- BLU-B W-R	E-12	M&B	Closes in circuit to 10 Point Relay.
	12B	-Y- B-W	B-10	N.C.	To No. 5 Target lite.
	12A	-J- -J-	E-11	N.O.	In series with Switch 13A on No. 6 Relay.
NO. 6	13C	G-B BR-R W-R	E-14	M&B	Opens in circuit to 1 Point Relay and closes to 10 Point Relay.
	13B	GREY-Y -Y- GREY-BLU	B-10	M&B	Opens in circuit to No. 6 Target lite and closes to Right Bottom Jet Bumper lite.
	13A	Y-G -J-	E-11	N.O.	Energizes 300 Relay, thru switches on No. 1 thru No. 5 Relays.
	14C	-J- Y-BLU W-R	E-12	M&B	Closes in circuit to 10 Point Relay.
	14B	-J- Y-R	D-12	N.C.	To No. 6 Relay Coil, from Right Side Rollover Switch.
	14A	Y-BR G-Y	D-10	N.C.	To "Center Target" relay, from switch on 300 Relay.



10¢ RELAY

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

25¢ RELAY

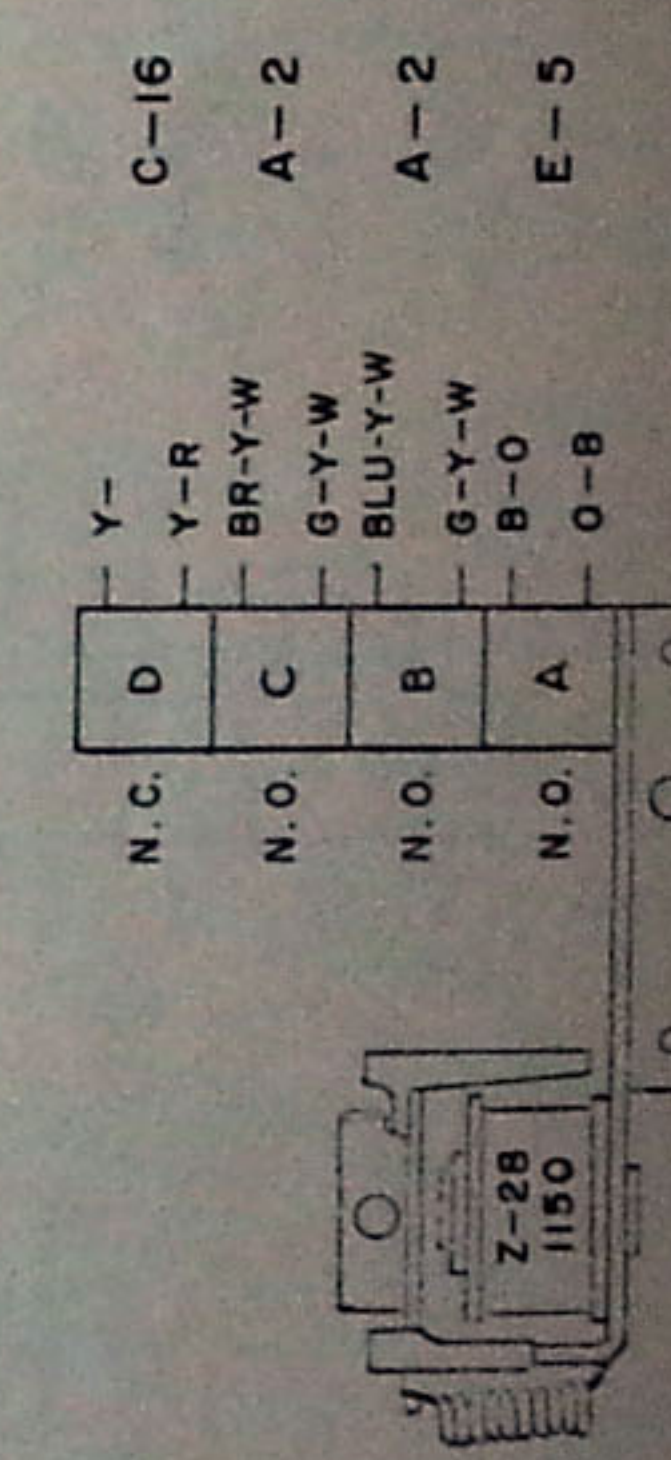
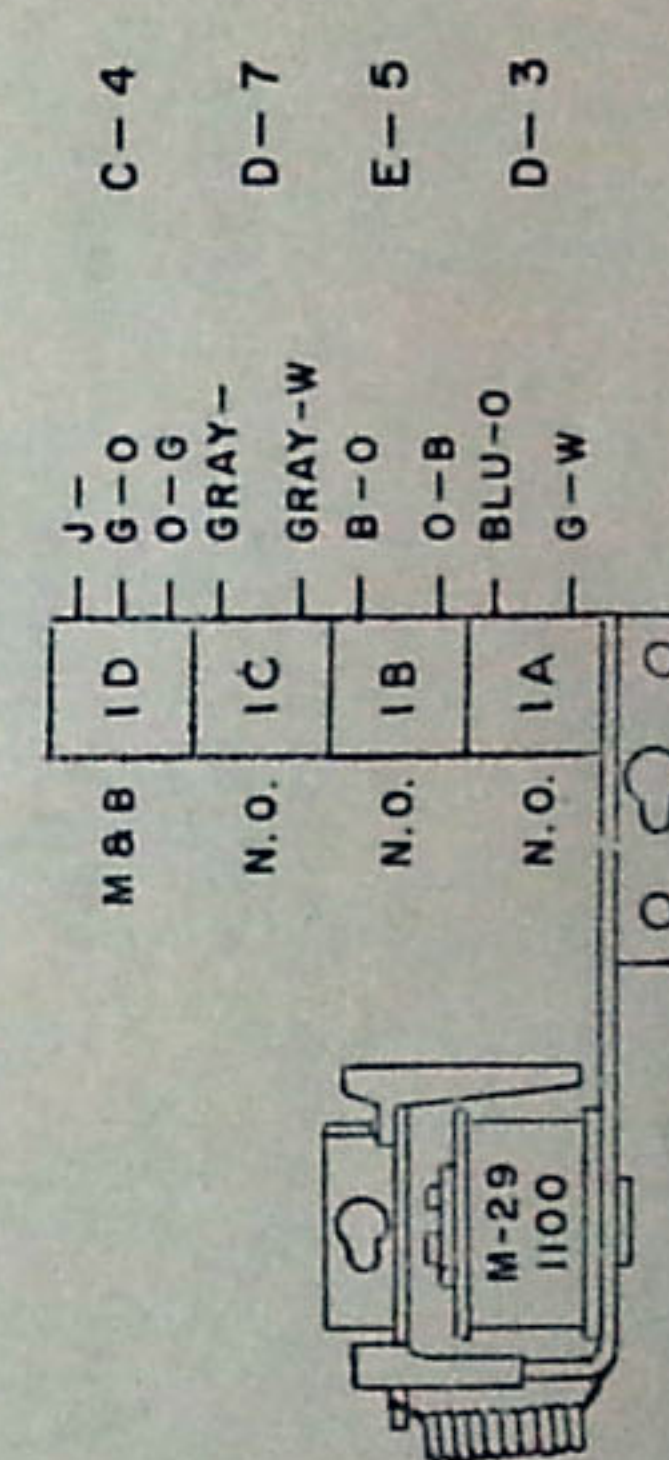
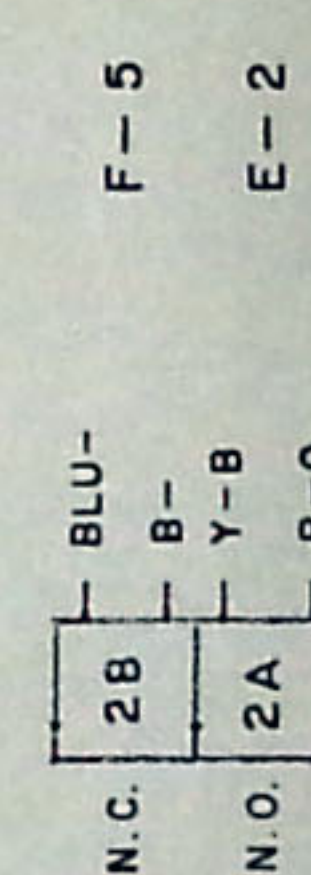
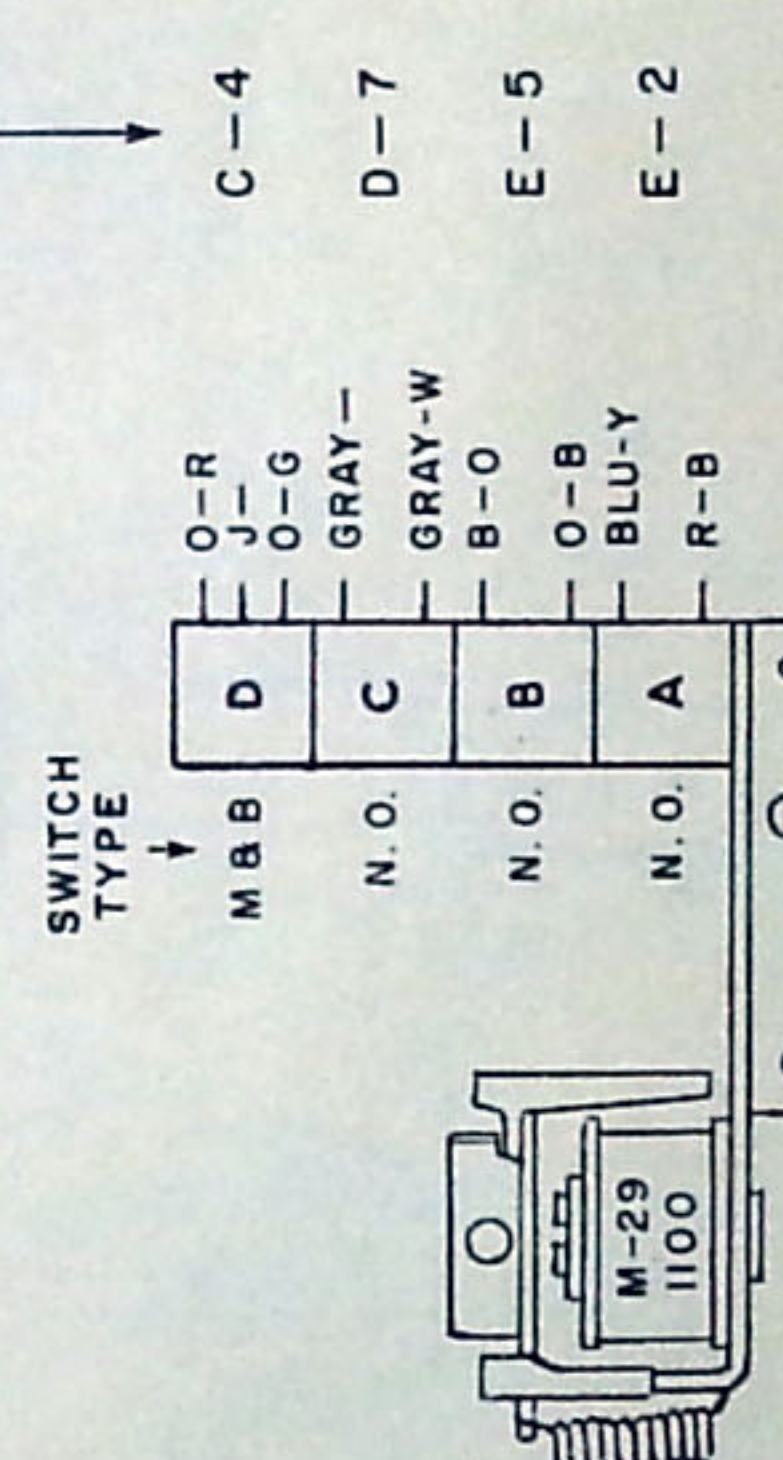
IS ENERGIZED BY 25¢ COIN SWITCH, THRU ANTI-CHEAT SWITCH ON FRONT DOOR.

LOCK RELAY

IS ENERGIZED BY COIN RELAY, 5¢, 10¢ OR 25¢ RELAYS---ALSO BY LEFT FLIPPER BUTTON.

A. C. RELAYS & SWITCHES (ON MECHANISM PANEL)

DIAGRAM LOCATION



IN CIRCUIT TO KNOCKER COIL,---ALSO RUNS SCORE MOTOR.
PULSES REPLAY S.U. COIL, THRU IMPULSE CAM SWITCH A.
ENERGIZES LOCK RELAY.
IN HOLD CIRCUIT TO THIS RELAY.

OPENS CIRCUIT TO REPLAY UNIT RESET COIL.
IN HOLD CIRCUIT TO THIS RELAY.

IN CIRCUIT TO KNOCKER COIL---ALSO RUNS SCORE MOTOR.
PULSES REPLAY S.U. COIL, THRU IMPULSE CAM SWITCH A.
ENERGIZES LOCK RELAY.
ENERGIZES COIN RELAY IF 25¢ ADJUSTMENT JACK IS IN "6 PLAYS" POSITION.

ENERGIZES GAME-OVER RELAY.
6 VOLTS FROM TRANSFORMER TO LITES.
6 VOLTS FROM TRANSFORMER TO LITES.
IN HOLD CIRCUIT TO THIS RELAY.

300 RELAY

IS ENERGIZED WHEN #1 THRU #6 RELAYS ARE TRIPPED.

500 RELAY

IS ENERGIZED BY SWITCH A ON CENTER TARGET RELAY.

CENTER TARGET RELAY

IS ENERGIZED BY CENTER TARGET SWITCHES.

BALL INDEX RELAY

IS ENERGIZED BY 1 POINT, 10 POINT OR 100 POINT RELAY.

OUTHOLE RELAY

IS ENERGIZED BY OUTHOLE SWITCH.

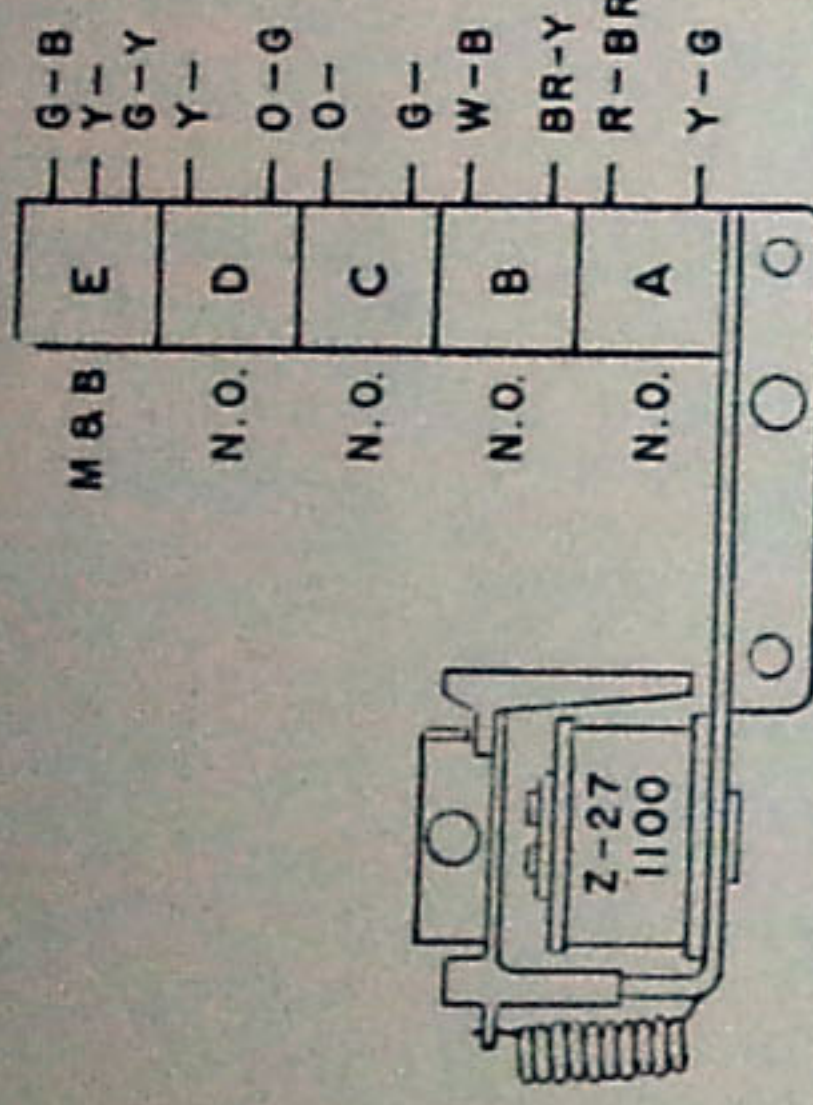
RESET RELAY

IS ENERGIZED BY SWITCH D ON COIN RELAY.

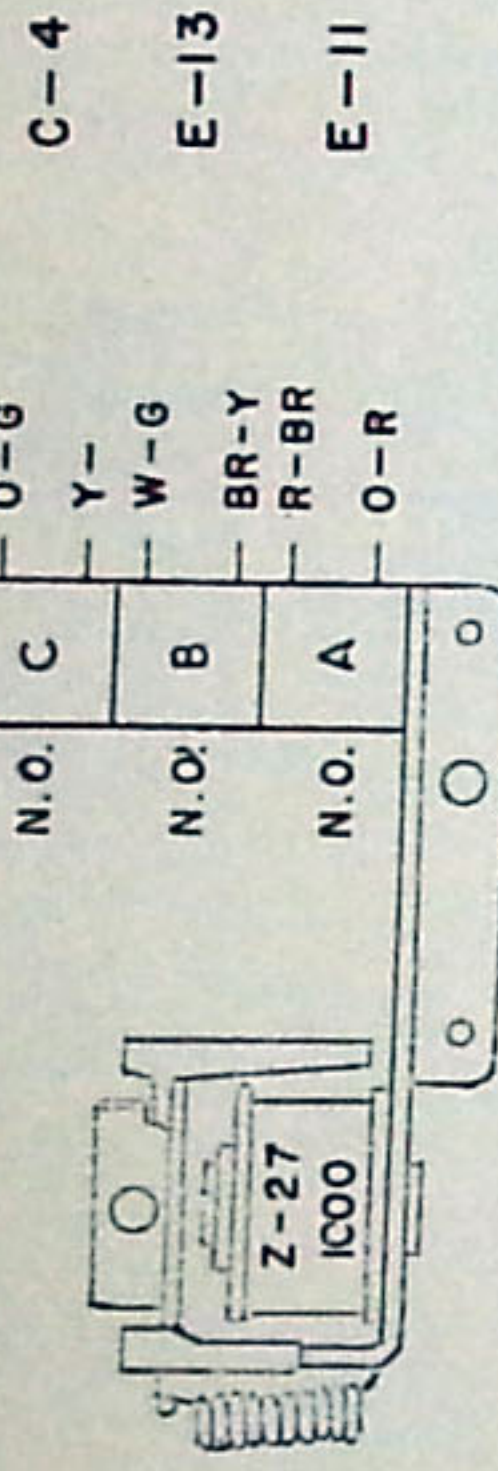
COIN RELAY

IS ENERGIZED BY COIN SWITCH---ALSO BY REPLAY BUTTON WHEN CREDIT IS AVAILABLE.

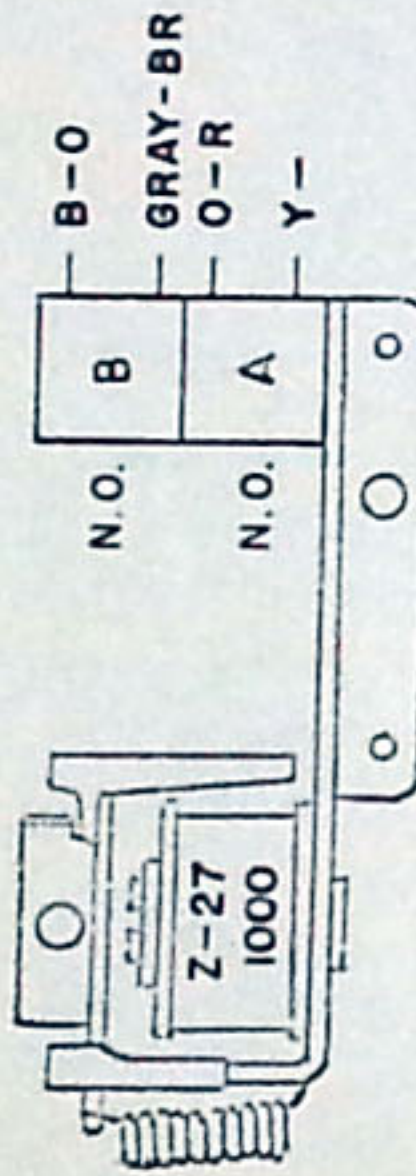
DIAGRAM LOCATION



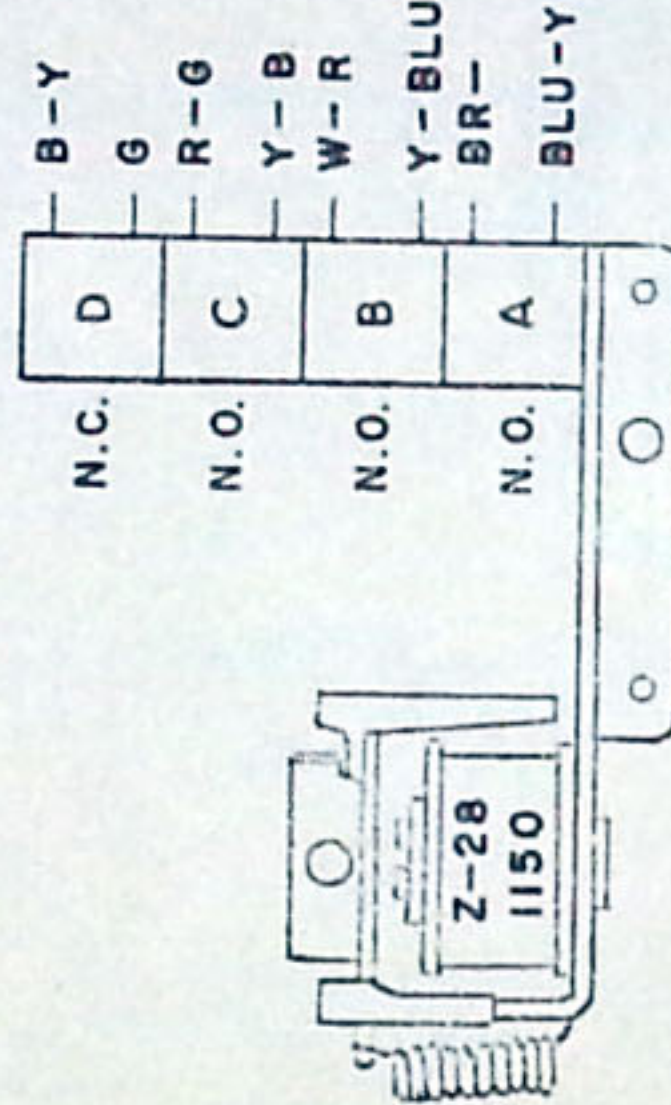
OPENS IN CIRCUIT TO CENTER TARGET RELAY AND CLOSURES TO CENTER TARGET COIL.
RUNS SCORE MOTOR.
ENERGIZES 115 VOLT RELAY BANK RESET COIL AT CAM SWITCH 3A.
PULSES 100 PT. RELAY AT CAM SWS. 1G, 2B and 3G.
IN HOLD CIRCUIT TO THIS RELAY.



RUNS SCORE MOTOR.
PULSES 100 POINT RELAY, THRU IMPULSE CAM SW. C.
IN HOLD CIRCUIT TO THIS RELAY.

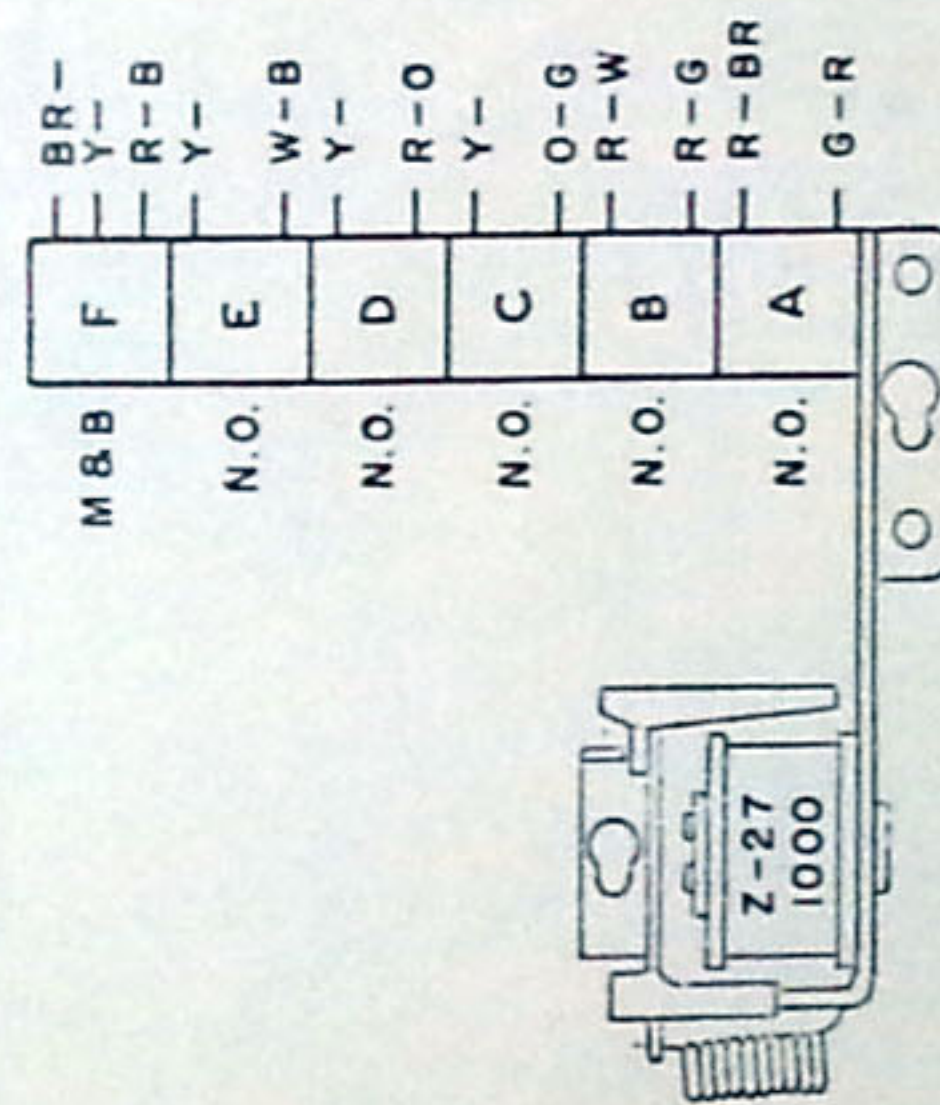


ENERGIZES REPLAY S.U. COIL, THRU ADVANCE UNIT DISC.
ENERGIZES 500 RELAY.

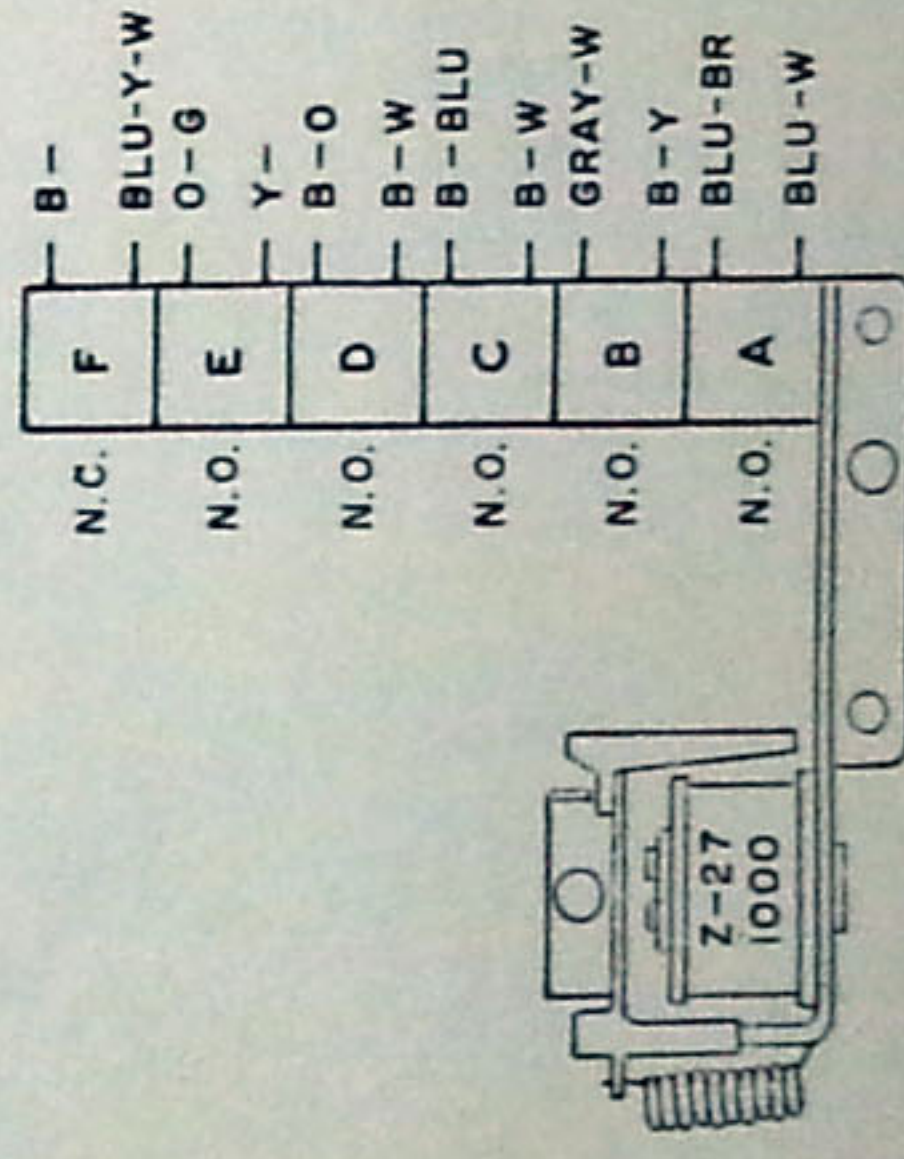


IN CIRCUIT TO 1000 POINT D.U. DURING RESET CYCLE.
IN NUMBER MATCH CIRCUIT TO RELAY S.U. COIL.
TO BALL COUNT S.U. COIL.
IN HOLD CIRCUIT TO THIS RELAY.

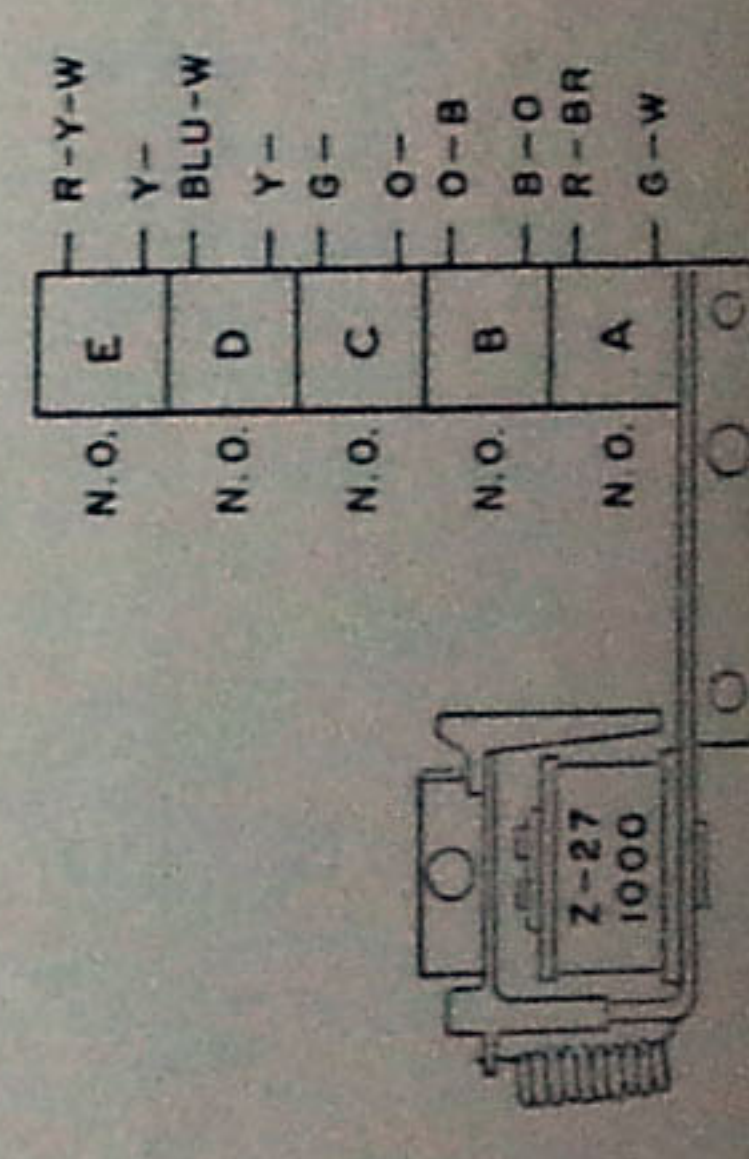
DIAGRAM LOCATION



OPENS IN HOLD CIRCUIT TO BALL INDEX RELAY AND CLOSURES TO BALL RELEASE COIL.
ENERGIZES "DOWN LEFT POST" AND "DOWN RIGHT POST" COILS.
ENERGIZES "DOWN CENTER POST" COIL.
RUNS SCORE MOTOR.
IN SERIES WITH SW.C ON BALL INDEX RELAY.
IN HOLD CIRCUIT TO THIS RELAY.



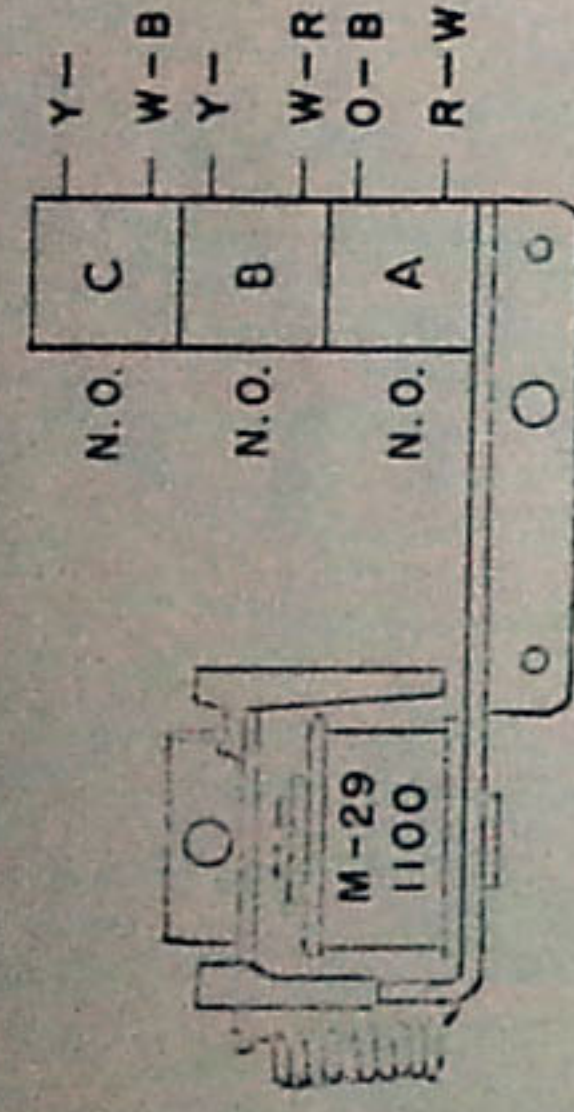
OPENS CIRCUIT TO PLAYFIELD SWITCHES.
RUNS SCORE MOTOR.
TO 1 POINT D.U. COIL, THRU ZERO SWITCH ON THAT UNIT.
TO 10 POINT D.U. COIL, THRU ZERO SWITCH ON THAT UNIT.
IN CIRCUIT TO 100 POINT D.U. COIL AND 1000 POINT D.U. COIL.
IN HOLD CIRCUIT TO THIS RELAY.



ENERGIZES RESET COILS ON BALL COUNT, REPLAY, AND ADVANCE UNITS.
ENERGIZES RESET RELAY.
ENERGIZES 115 VOLT RELAY BANK RESET COIL AT CAM SWITCH 3A.
ENERGIZES LOCK RELAY.
IN HOLD CIRCUIT TO THIS RELAY.

SIDE POST RELAY

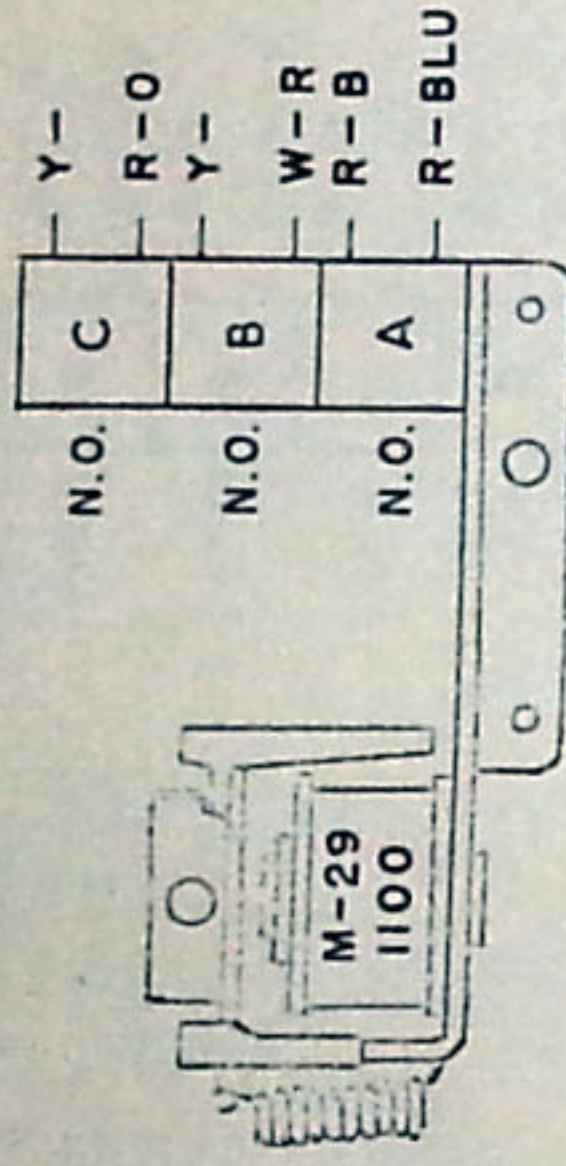
IS ENERGIZED BY ROLLOVER BUTTON
---"DOWN LEFT AND RIGHT POSTS".



ENERGIZES "DOWN LEFT POST" AND "DOWN RIGHT POST" COILS.
ENERGIZES 10 POINT RELAY.
IN HOLD CIRCUIT TO THIS RELAY.

CENTER POST RELAY

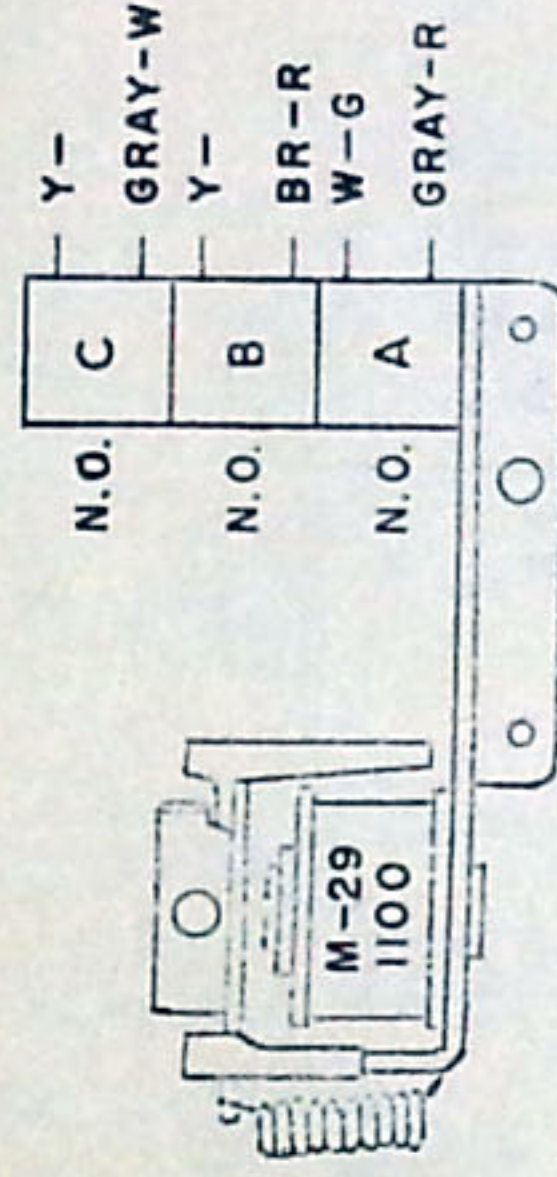
IS ENERGIZED BY ROLLOVER BUTTON---
"DOWN CENTER POST".



ENERGIZES "DOWN CENTER POST" COIL.
ENERGIZES 10 POINT RELAY.
IN HOLD CIRCUIT TO THIS RELAY.

NO. 4 BUMPER RELAY

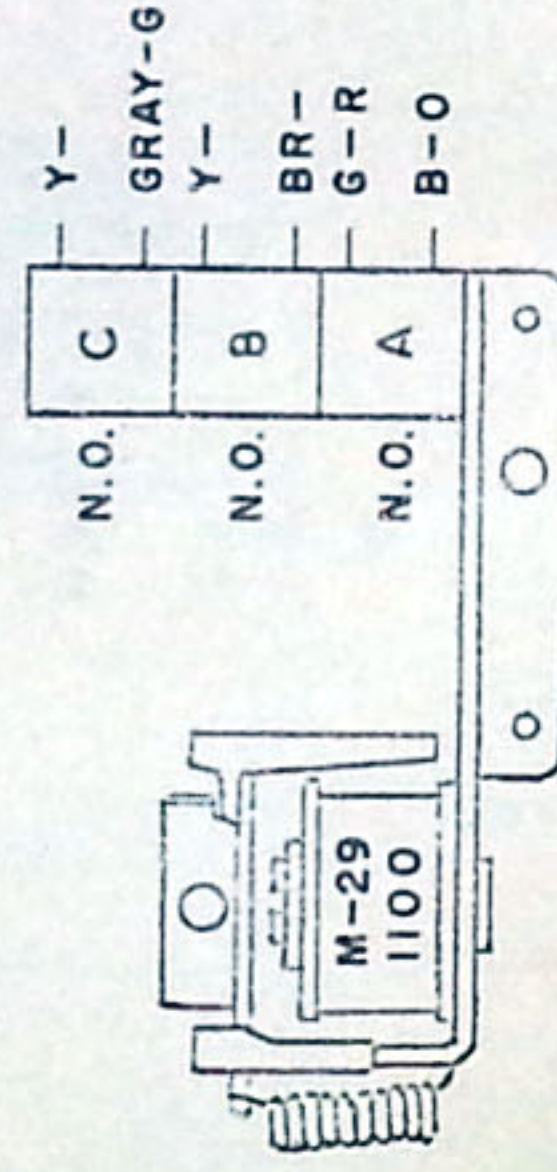
IS ENERGIZED BY RIGHT BOTTOM JET
BUMPER SWITCH.



ENERGIZES RIGHT BOTTOM JET BUMPER.
PULSES 1 POINT RELAY OR 10 POINT RELAY.
IN HOLD CIRCUIT TO THIS RELAY.

NO. 3 BUMPER RELAY

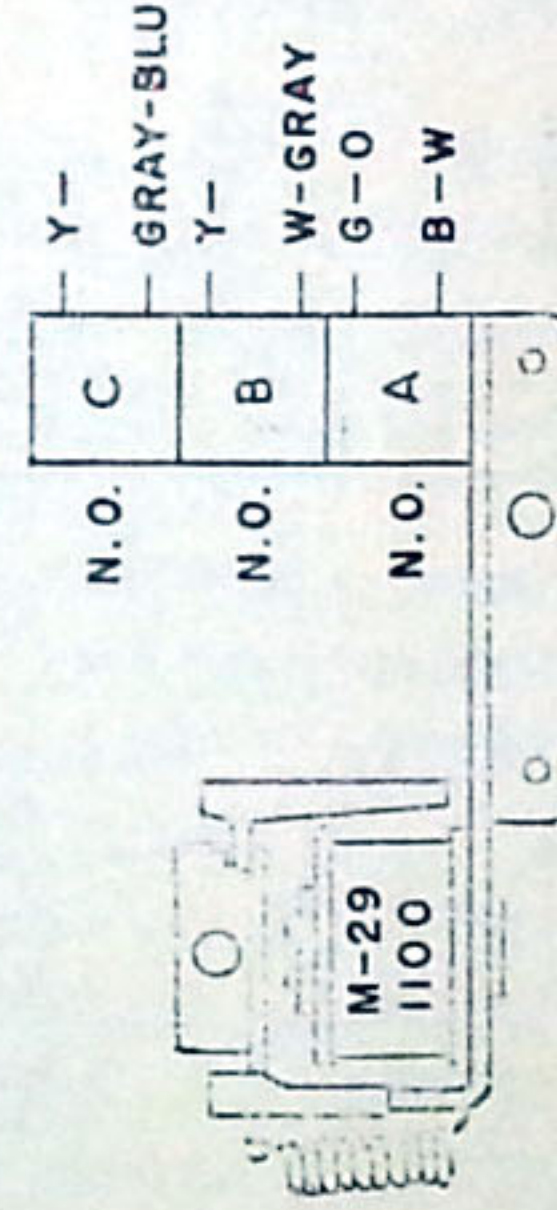
IS ENERGIZED BY LEFT BOTTOM JET
BUMPER SWITCH.



ENERGIZES LEFT BOTTOM JET BUMPER.
PULSES 1 POINT RELAY OR 10 POINT RELAY.
IN HOLD CIRCUIT TO THIS RELAY.

NO. 2 BUMPER RELAY

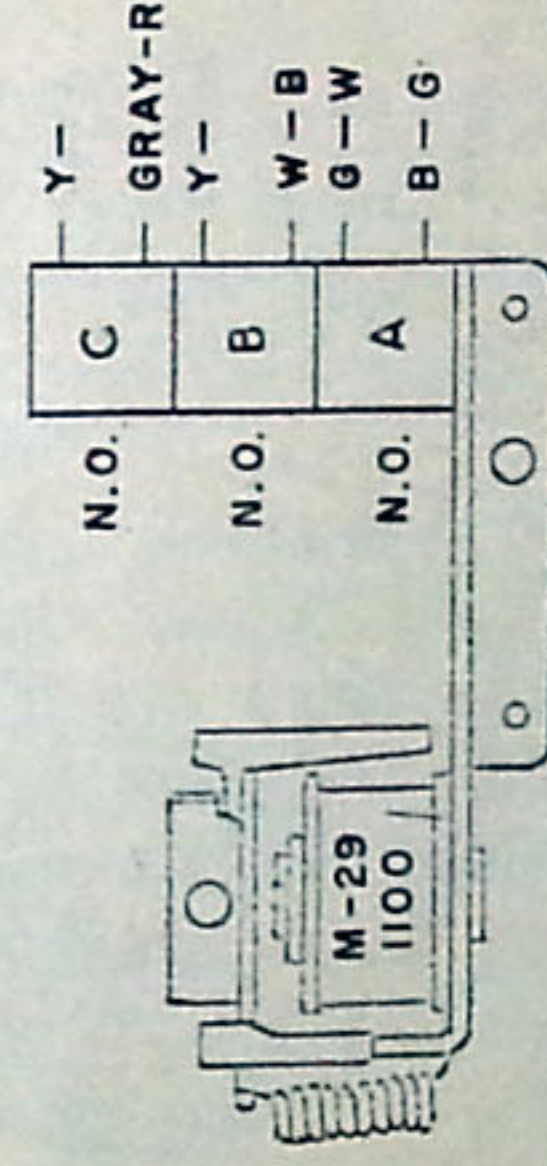
IS ENERGIZED BY RIGHT TOP JET
BUMPER SWITCH.



ENERGIZES RIGHT TOP JET BUMPER.
PULSES 1 POINT RELAY OR 10 POINT RELAY.
IN HOLD CIRCUIT TO THIS RELAY.

NO. 1 BUMPER RELAY

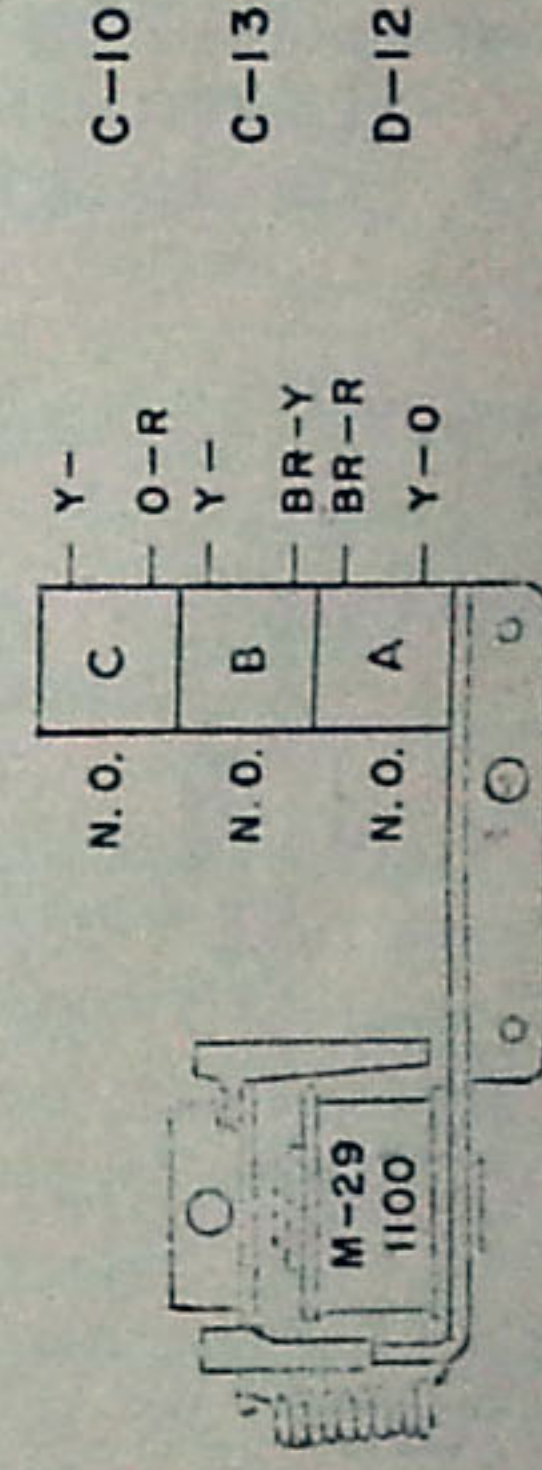
IS ENERGIZED BY LEFT TOP JET
BUMPER SWITCH.



ENERGIZES LEFT TOP JET BUMPER.
PULSES 1 POINT RELAY OR 10 POINT RELAY.
IN HOLD CIRCUIT TO THIS RELAY.

MAN ADVANCE RELAY

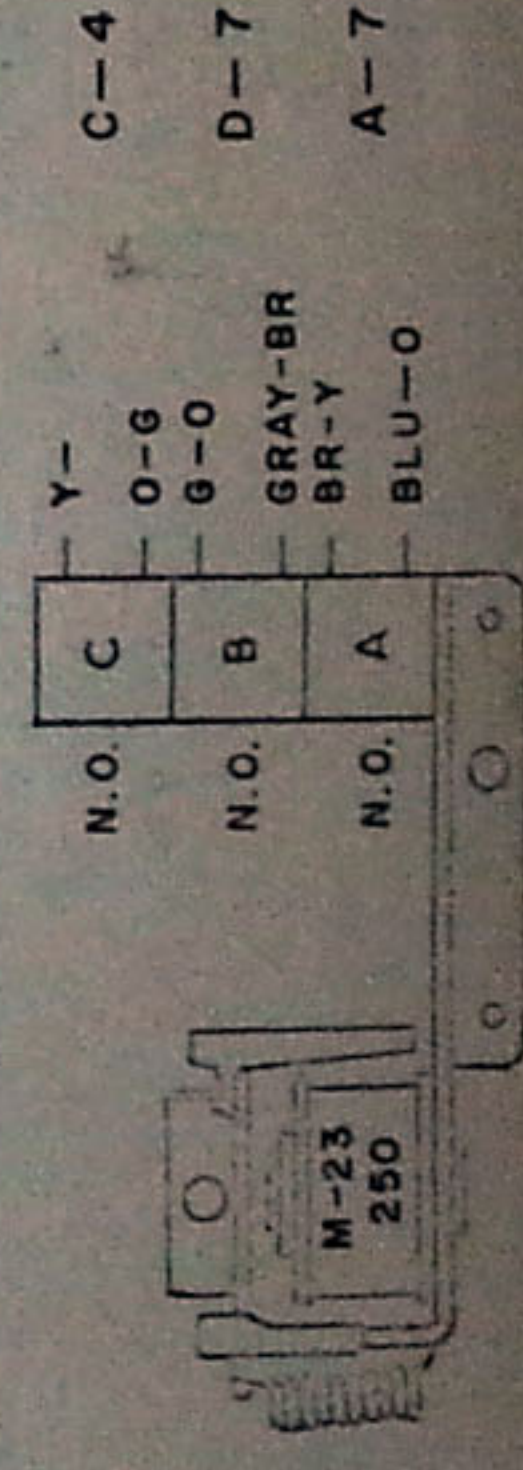
IS ENERGIZED BY A.B.C.D. OR E
ROLLOVERS, WHEN LIT.



ENERGIZES MAN ADVANCE S.U. COIL.
ENERGIZES 100 POINT RELAY.
IN HOLD CIRCUIT TO THIS RELAY.

SPECIAL RELAY

THIS IS A 6 VOLT RELAY. IT IS EN-
ERGIZED BY MAN ADVANCE UNIT END-OF-
STROKE SWITCH, THRU MAN ADVANCE
UNIT DISC.

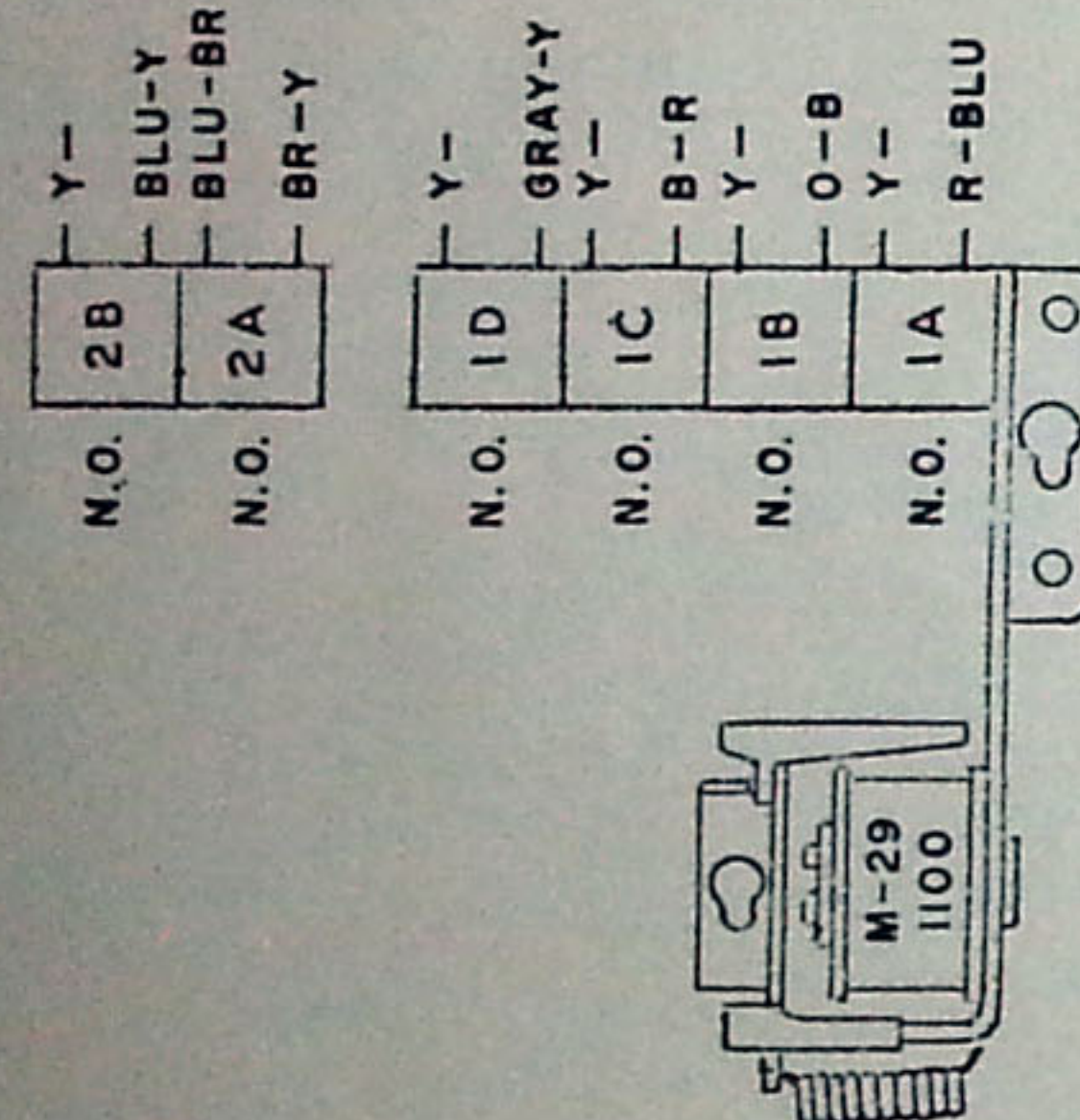


RUNS SCORE MOTOR.
PULSES REPLAY S.U. COIL AT GAM SWITCHES 3B
AND 4B.
IN HOLD CIRCUIT TO THIS RELAY.

100 POINT RELAY

IS ENERGIZED BY MAN ADVANCE RELAY, LEFT AND RIGHT BOTTOM ROLLOVER SWITCHES, 300 RELAY AND 500 RELAY.

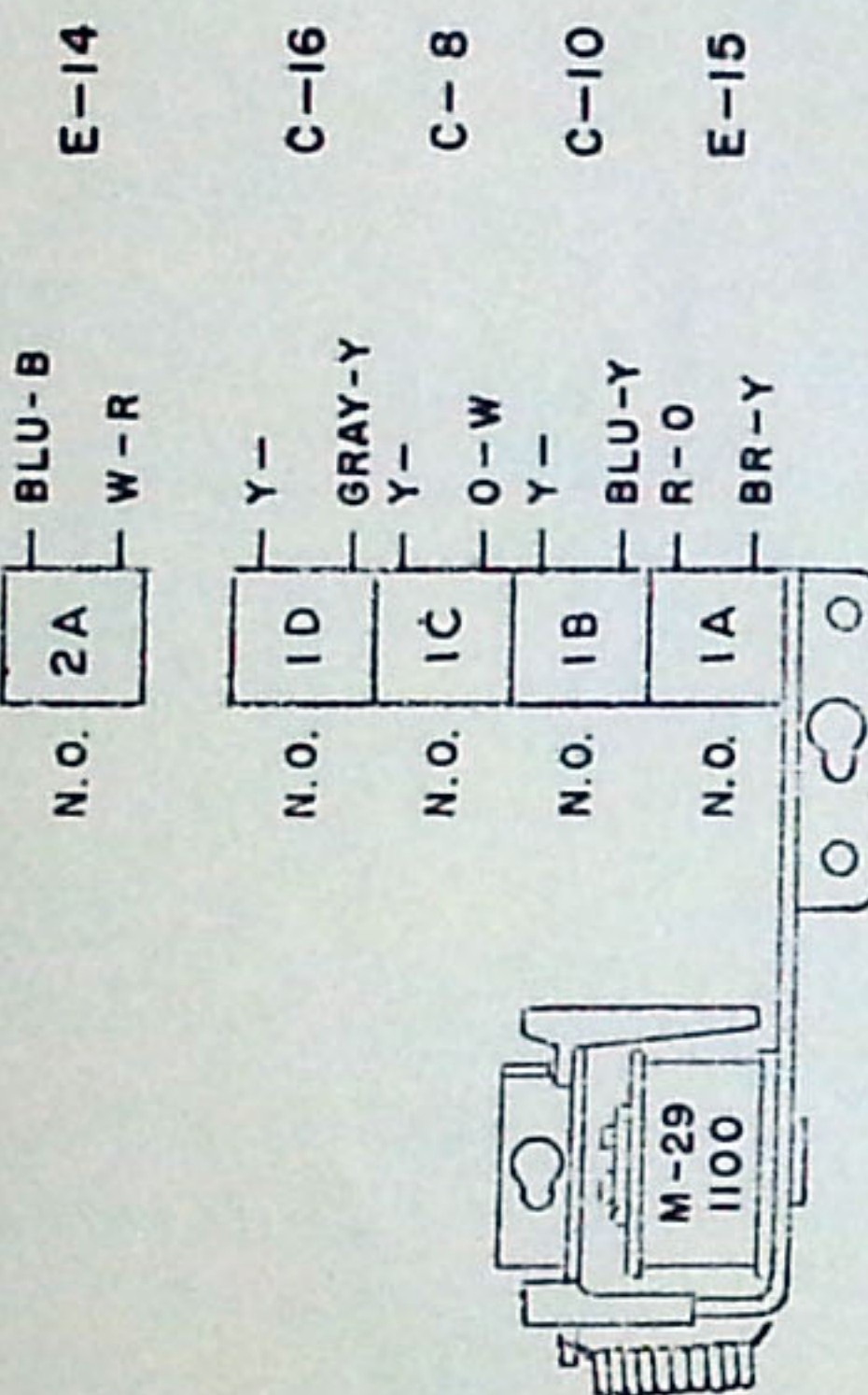
DIAGRAM LOCATION



ENERGIZES BALL INDEX RELAY.
IN HOLD CIRCUIT TO THIS RELAY.
ENERGIZES LARGE BELL COIL.
PULSES 1000 POINT D.U., THRU 9TH POSITION SWITCH ON 100 POINT D.U.
PULSES 100 POINT DRUM UNIT.
IN HI-SCORE CIRCUIT TO REPLAY S.U. COIL.

10 POINT RELAY

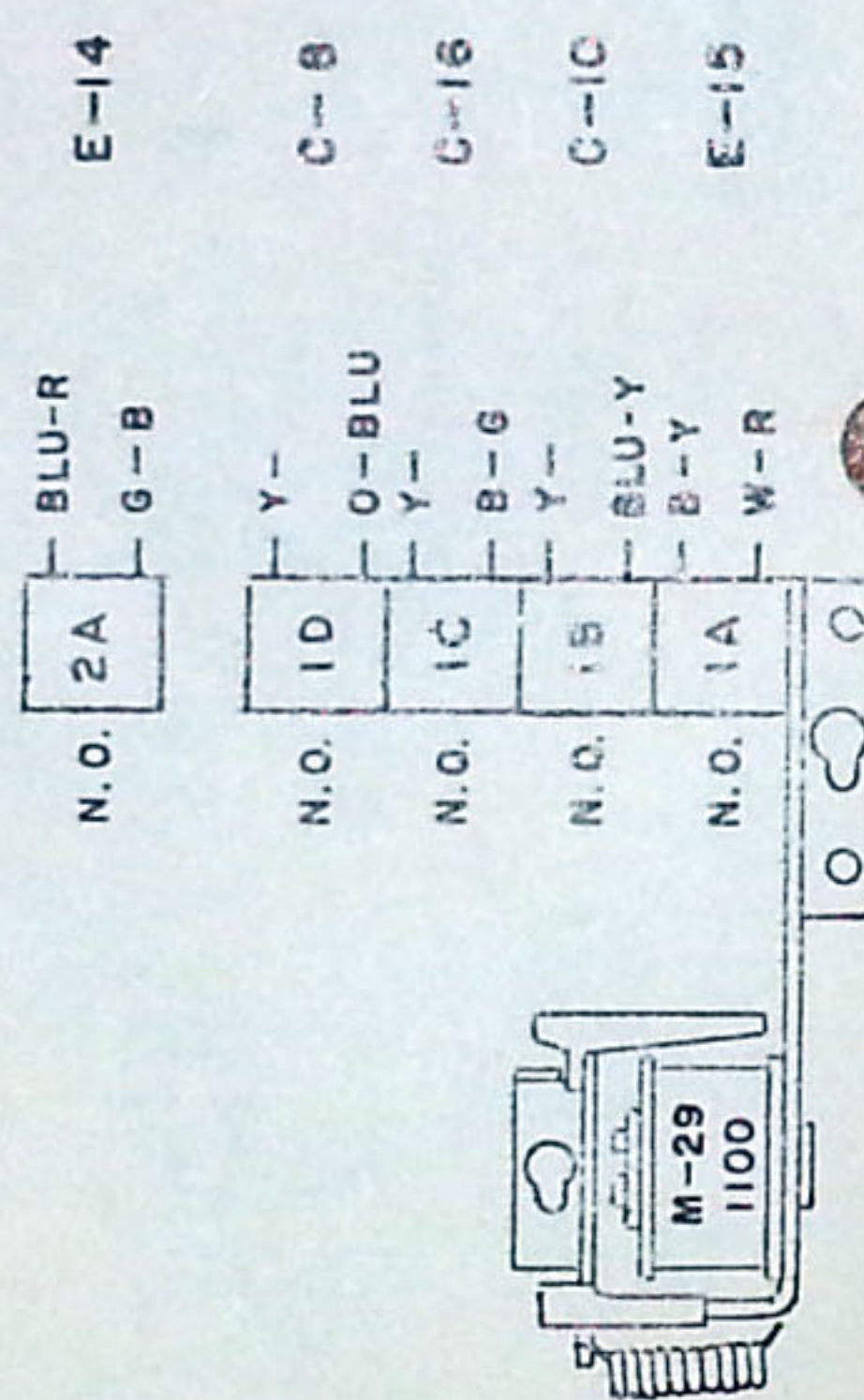
IS ENERGIZED BY SIDE POST RELAY, CENTER POST RELAY, (L) BUMPER RELAYS AND (6) TARGET SWITCHES.



IN HOLD CIRCUIT TO THIS RELAY.
ENERGIZES LARGE BELL COIL.
PULSES 10 POINT DRUM UNIT.
ENERGIZES BALL INDEX RELAY.
PULSES 100 POINT RELAY, THRU 9TH POSITION SWITCH ON 10 POINT D.U.

1 POINT RELAY

IS ENERGIZED BY STANDUP SWITCHES, KICKER SWITCHES, AND (L) BUMPER RELAYS.



IN HOLD CIRCUIT TO THIS RELAY.
PULSES 1 POINT DRUM UNIT.
ENERGIZES NUMBER MATCH S.U. COIL.
ENERGIZES BALL INDEX RELAY.
PULSES 10 POINT RELAY, THRU 9TH POSITION SWITCH ON 1 POINT DRUM UNIT.

4. RELAY and SWITCH ADJUSTMENT

Where relay adjustments are called for, before bending blades, in all cases, on any machine, make certain that the screws holding the switch stacks are down very tightly. This is suggested because the plastic spacers in the switch stacks have occasionally shrunk by drying out, causing a poor adjustment.

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.