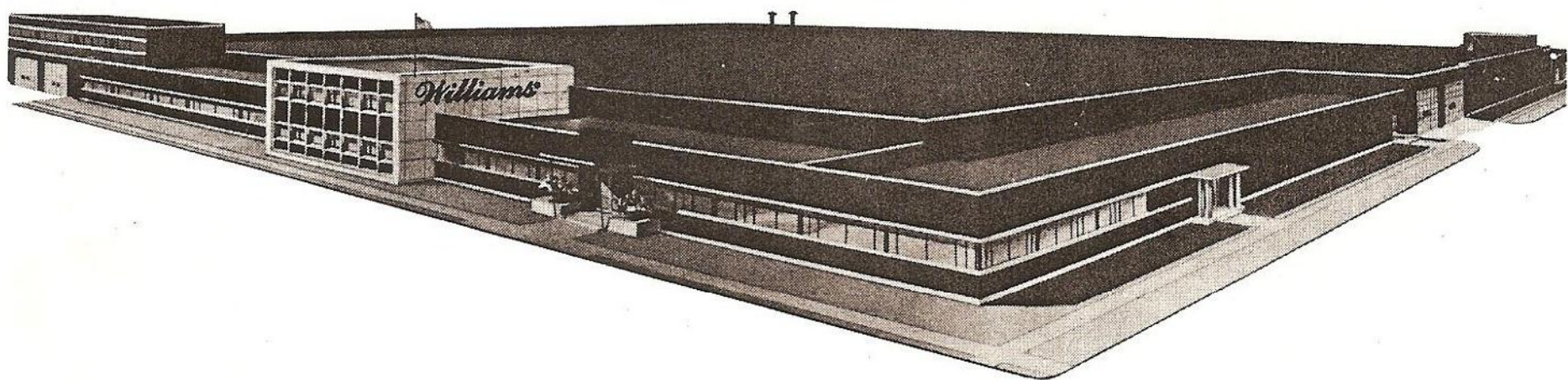


# Instruction Manual

## for **KLONDIKE** & **YUKON**



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

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# **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.

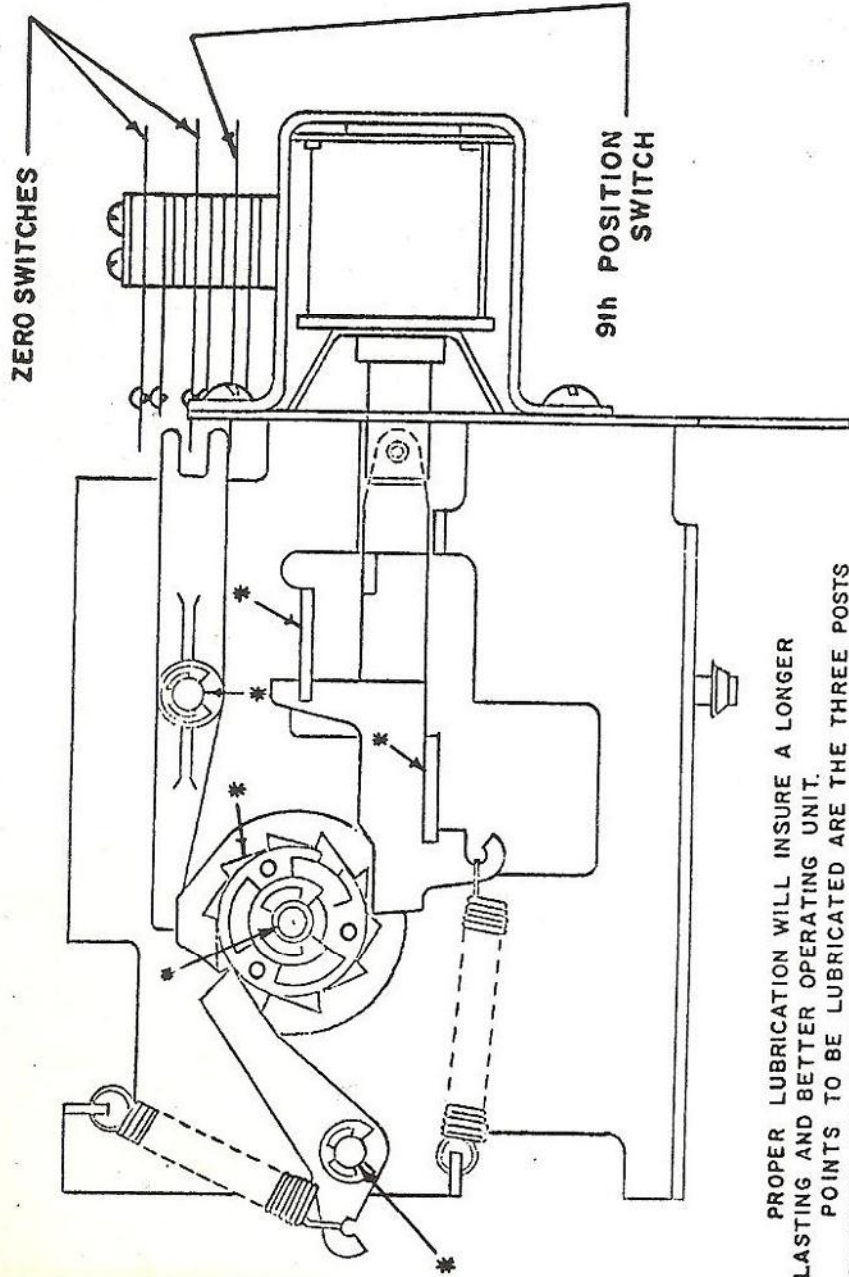
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## **SERVICEMAN TO REMOVE BACKGLASS:**

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



## SCORE DRUM UNIT



PROPER LUBRICATION WILL INSURE A LONGER LASTING AND BETTER OPERATING UNIT. POINTS TO BE LUBRICATED ARE THE THREE POSTS ON WHICH THE NYLON PARTS ROTATE, EACH TOOTH OF THE RATCHET, ALSO THE (2) DRIVE PAWL GUIDE SLOTS, INDICATED BY (\*).

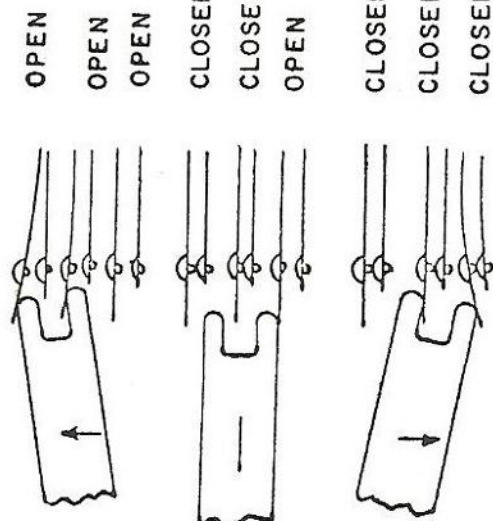
**LUBRICATION: DO NOT PUT LUBRICANT ON DRIVE ARMATURE**

### SWITCH ADJUSTMENT

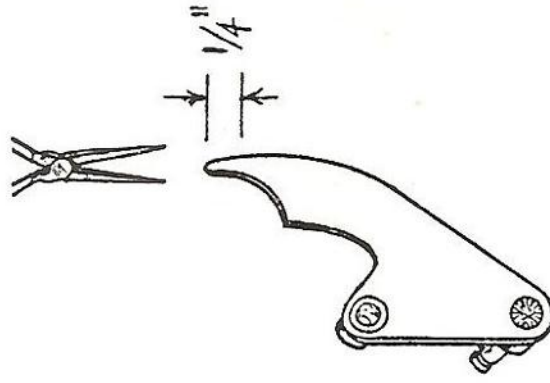
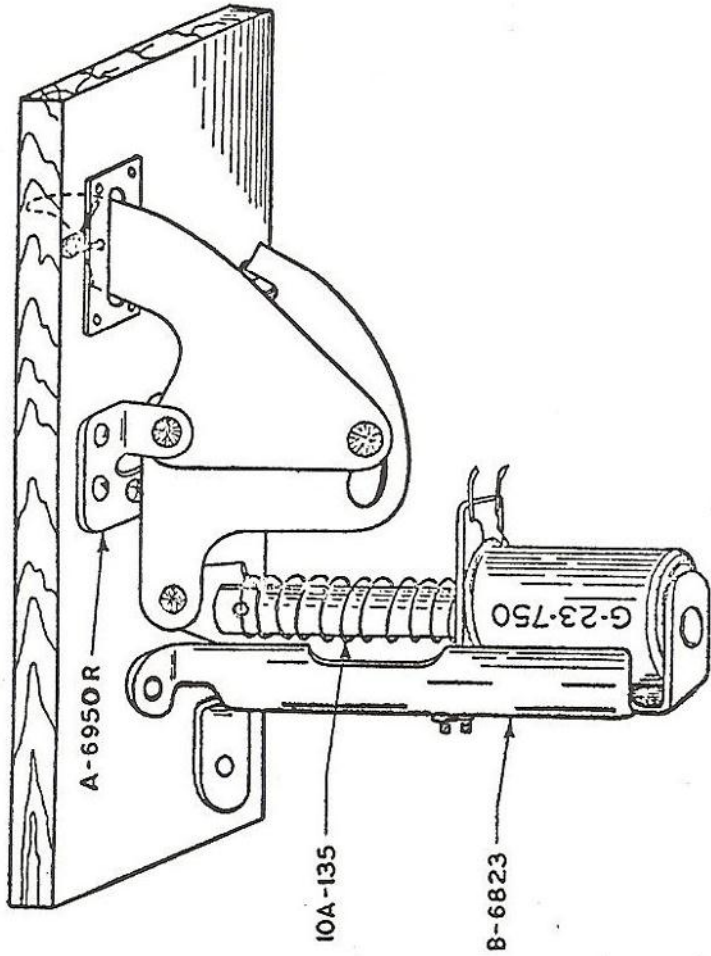
AT "0" OR INDEX POSITION ALL SWITCHES ARE OPEN AS SHOWN.

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

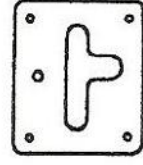
AT 9th POSITION ALL SWITCHES ARE CLOSED AS SHOWN



## BALL EJECT CAM UNIT



TO CHANGE DIRECTION OF BALL, WHEN EJECTED, GRASP "BALL EJECT CAM" WITH LONG-NOSED PLIERS (APPROXIMATELY 1/4") AND BEND SLIGHTLY. BENDING TO THE LEFT WILL CHANGE DIRECTION OF EJECTED BALL SLIGHTLY TO THE RIGHT, AND VICE-VERSA.



**CAUTION**  
IF BEND IS TOO GREAT, IT MAY CAUSE A BIND WHEN "BALL EJECT CAM" IS RESTING IN PART #3A-6015G-6.



## 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

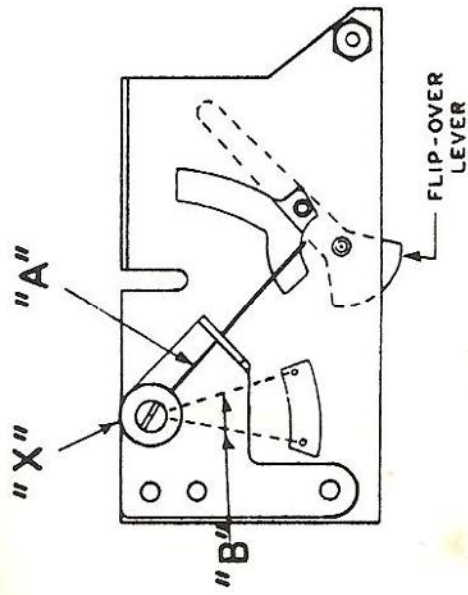
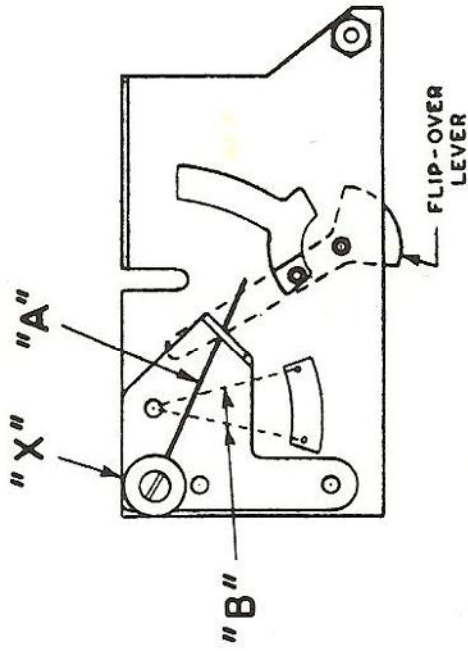


FIGURE 2



### 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.

## 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 NAME	CONTACT DISC	WIPER ASSEMBLY	RATCHET GEAR ASSEMBLY	MOTORS
REPLAY	-----	-----	A-6400	SCORE MOTOR
BALL COUNT	A-7398	C-6520	A-6402-9	14A-7805 (60 CYCLE)
NO. MATCH	C-6879	C-6520	A-6401	14A-7806 (50 CYCLE)
10 POINT	A-7195	A-6294	3C-7272	
100 POINT	-----	-----	3C-7272	
1000 POINT	-----	-----	3C-7272	
10000 POINT	A-7195	A-6294	3C-7272	
LEFT REEL	B-7253	A-7394	3C-7272	
CENTER REEL	B-7253	A-7394	3C-7272	
RIGHT REEL	B-7253	A-6294	3C-7272	
ALTERNATOR	-----	-----	3C-7272	



## 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 in to 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.

## KLONDIKE

A SINGLE PLAYER GAME WITH ADJUSTABLE HI-SCORE AND NUMBER MATCH AWARDS.

FEATURE OF GAME IS TO LINE UP SYMBOLS ON THE 3 REELS ON PLAYFIELD, AS INDICATED ON SCORE CARD.

LEFT ADVANCE RELAY, CENTER ADVANCE RELAY AND RIGHT ADVANCE RELAY WILL PULSE THE CORRESPONDING REEL. THE (3) ADVANCE RELAYS ARE PULSED BY (3) TOP ROLLOVER BUTTONS, (6) ROLLOVER LANES AND (5) TARGETS, AS INDICATED ON PLAYFIELD.

TO COLLECT REEL VALUE, BALL MUST MAKE LEFT OR RIGHT TOP, OR LEFT OR RIGHT BOTTOM ROLLOVER LANE SWITCHES, OR ANY OF (3) EJECT POCKET SWITCHES.

THE (3) EJECT POCKET SWITCHES WILL ENERGIZE THE EJECT RELAY. THE (4) ROLLOVER LANE SWITCHES WILL ENERGIZE THE ROLLOVER RELAY. EJECT RELAY OR ROLLOVER RELAY (EITHER ONE) WILL RUN SCORE MOTOR AND COMPLETE CIRCUITS TO COLLECT REEL VALUE.

A NORMALLY CLOSED SWITCH ON ROLLOVER RELAY OPENS CIRCUITS TO (3) TOP ROLLOVER BUTTONS AND (3) TOP TARGET SWITCHES, SO THAT REELS CANNOT ADVANCE WHILE REEL VALUE IS BEING COLLECTED.

WHEN COLLECTING FOR A "SPECIAL" (3 WAGONS), THE CENTER REEL IS PULSED AT CAM SWITCH 5B, SO THAT PLAYER MUST LINE UP REEL AGAIN.

WHEN GAME-OVER RELAY IS TRIPPED, LEFT AND RIGHT REELS ARE PULSED BY IMPULSE CAM SWITCH E, WHEN BALL MAKES OUTHOLE SWITCH. THIS PROVIDES AN AUTOMATIC MIX ON "GAME-OVER" OR "TILT".

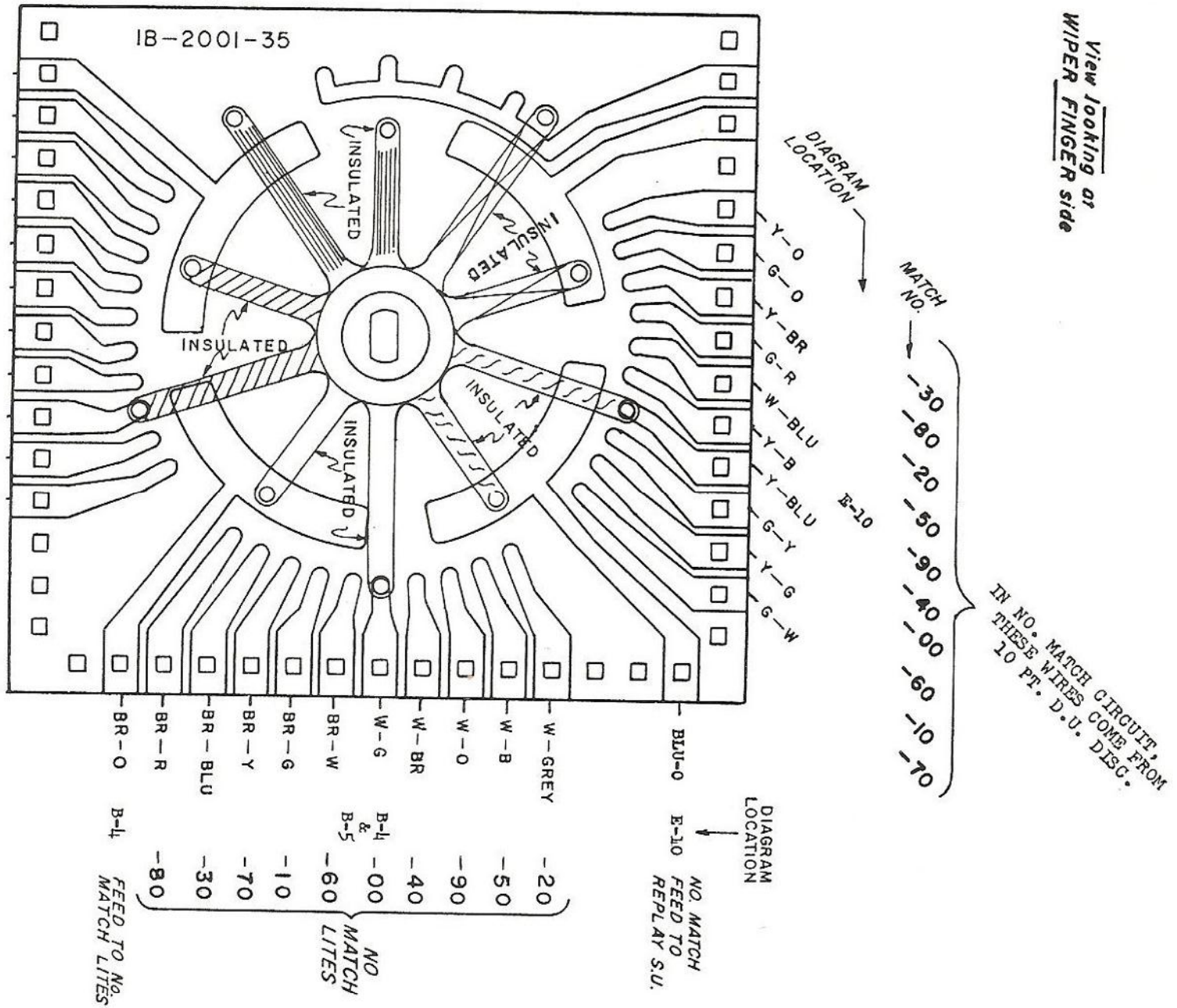
## YUKON

SAME AS KLONDIKE WITH FOLLOWING EXCEPTIONS:

NUMBER MATCH ADJUSTMENT MUST BE IN "OFF" POSITION.

"REPLAY-ADD-A-BALL-NOVELTY" ADJUSTMENT MUST NOT BE IN "REPLAY POSITION.



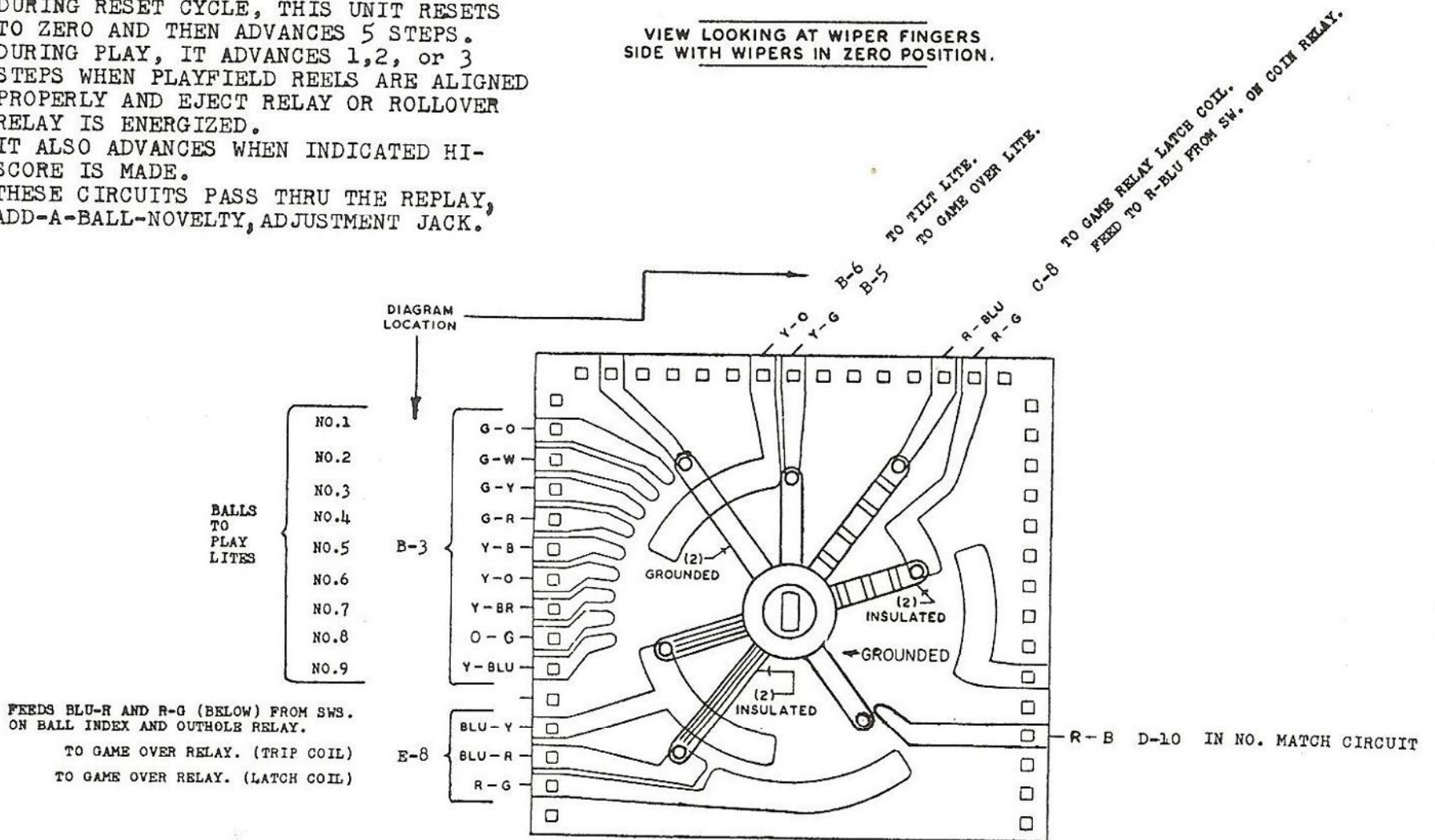


**NO. MATCH UNIT**  
THIS UNIT ADVANCES ONE STEP EACH TIME THE TEN POINT RELAY IS PULSED.

**BALL COUNT UNIT DISC**

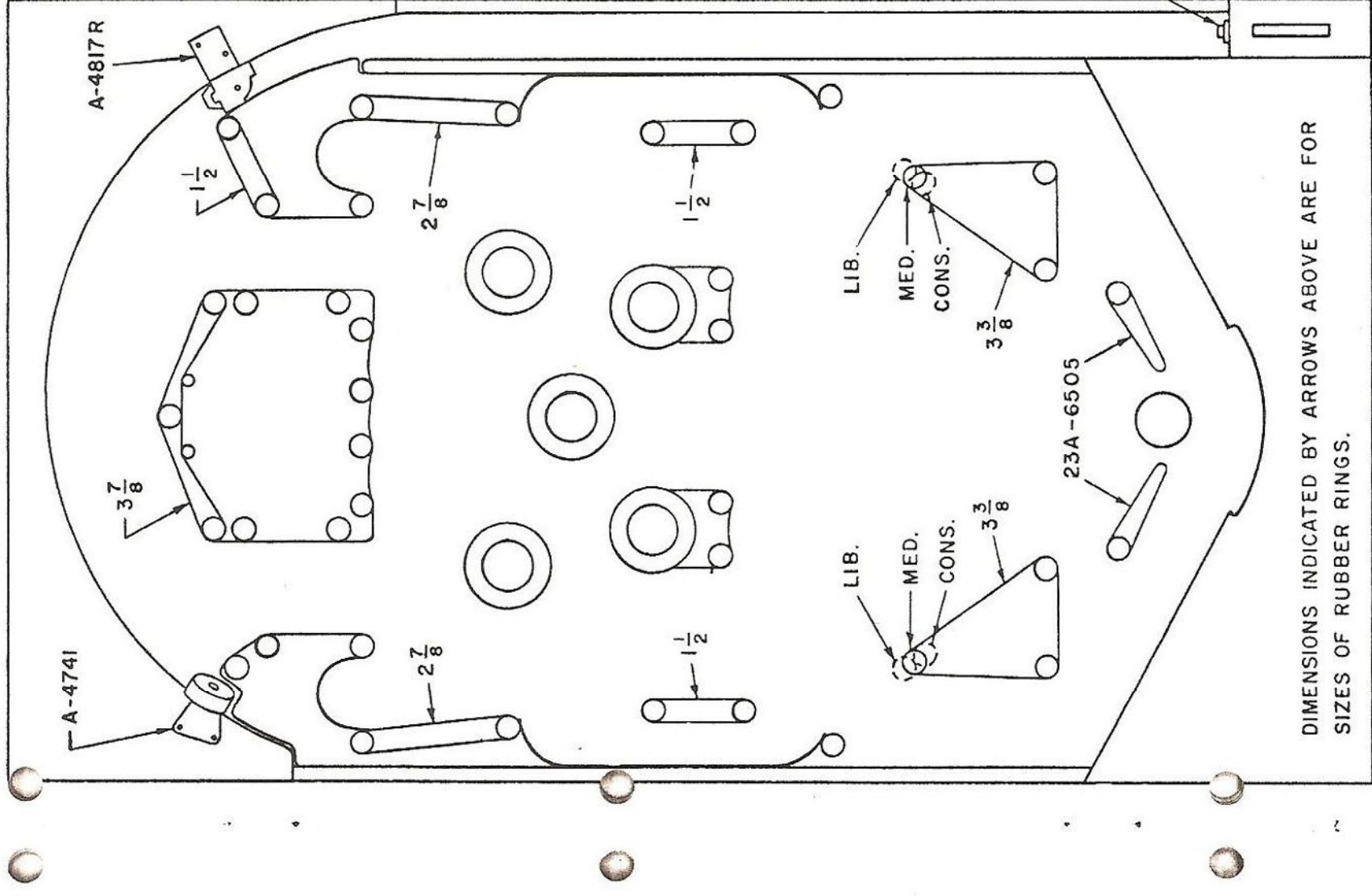
DURING RESET CYCLE, THIS UNIT RESETS TO ZERO AND THEN ADVANCES 5 STEPS. DURING PLAY, IT ADVANCES 1, 2, or 3 STEPS WHEN PLAYFIELD REELS ARE ALIGNED PROPERLY AND EJECT RELAY OR ROLLOVER RELAY IS ENERGIZED. IT ALSO ADVANCES WHEN INDICATED HI-SCORE IS MADE. THESE CIRCUITS PASS THRU THE REPLAY, ADD-A-BALL-NOVELTY, ADJUSTMENT JACK.

VIEW LOOKING AT WIPER FINGERS SIDE WITH WIPERS IN ZERO POSITION.





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.



23A-6327 BALL SHOOTER RUBBER TIP

**ABBREVIATIONS :**

CONS. — CONSERVATIVE  
LIB. — LIBERAL  
MED. — MEDIUM

**RUBBER RING NUMBERS :**

23A-6300 5/16" I.D.  
23A-6304 1 1/2" I.D.  
23A-6307 2 7/8" I.D.  
23A-6308 3 3/8" I.D.  
23A-6309 3 7/8" I.D.  
23A-6505 FLIPPER R.R.

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

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
11 A 7806	SCORE MOTOR - 50 CYCLE	MECH. PANEL
15 A 6771	TRANSFORMER - 60 CYCLE	MECH. PANEL
15 A 6782-1	TRANSFORMER - 50 CYCLE	MECH. PANEL
B 6396	24 VOLT METER	MECH. PANEL
<b>SOLENOID COILS</b>		
A 22-550	MATCH UNIT STEP UP BALL COUNT UNIT STEP UP BALL RELEASE	INSERT INSERT PLAYFIELD
A 23-600	REPLAY UNIT STEP UP	INSERT
A2-23-750	KNOCKER	CABINET
B 26-800	ALTERNATOR UNIT BALL COUNT UNIT RESET SCORE DRUM UNITS ... (4 req'd.) REPLAY UNIT RESET	MECH. PANEL INSERT INSERT INSERT
B1-26-800	REELS ... (3 req'd.)	PLAYFIELD
C 2-26-800	CHIME	INSERT
G 22-550	JET BUMPER ... (5 req'd.)	PLAYFIELD
G 23-750	AUTO KICKERS ... (2 req'd.) EJECT COILS ... (3 req'd.) DOWN POST	PLAYFIELD PLAYFIELD PLAYFIELD
FL 21-375/ 28-400	FLIPPERS ... (2 req'd.)	PLAYFIELD
<b>RELAY COILS</b>		
M 1-31-1500	COIN LOCKOUT	DOOR
M 29-1000	GAME TRIP GAME OVER TRIP UP POST GAME OVER LATCH	MECH. PANEL MECH. PANEL PLAYFIELD MECH. PANEL
M 29-1100	5¢ RELAY 10¢ RELAY 25¢ RELAY 10 POINT RELAY 1,000 POINT RELAY NO. 1 BUMPER RELAY NO. 2 BUMPER RELAY NO. 3 BUMPER RELAY NO. 4 BUMPER RELAY NO. 5 BUMPER RELAY POST RELAY LEFT ADVANCE RELAY RIGHT ADVANCE RELAY CENTER ADVANCE RELAY ROLLOVER RELAY SCORE RESET RELAY	MECH. PANEL MECH. PANEL MECH. PANEL INSERT INSERT PLAYFIELD PLAYFIELD PLAYFIELD PLAYFIELD PLAYFIELD PLAYFIELD PLAYFIELD PLAYFIELD PLAYFIELD PLAYFIELD PLAYFIELD PLAYFIELD INSERT
M 30-1300	100,000 POINT RELAY	INSERT
M 30-1400	3,000 RELAY 4,000 RELAY 5,000 RELAY SPECIAL RELAY BAR RELAY	PLAYFIELD PLAYFIELD PLAYFIELD PLAYFIELD PLAYFIELD
Z 27-1000	GAME LATCH EJECT RELAY COIN RELAY OUTHOLE RELAY RESET RELAY	MECH. PANEL MECH. PANEL MECH. PANEL MECH. PANEL MECH. PANEL
Z 28-1150	LOCK RELAY BALL INDEX RELAY ON YELLOW RELAY ON GREEN RELAY	MECH. PANEL MECH. PANEL PLAYFIELD PLAYFIELD
XM 27-675	METER COIL	B 6396

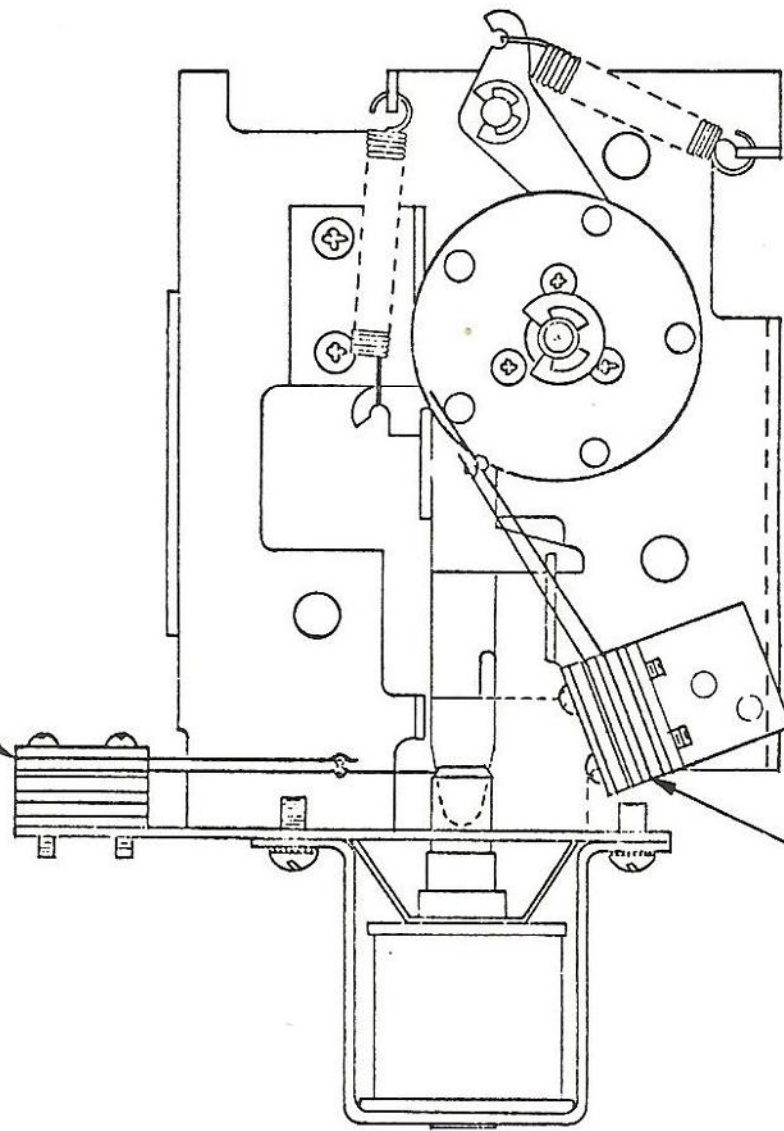


## ALTERNATOR UNIT

LOCATED ON MECHANISM PANEL.

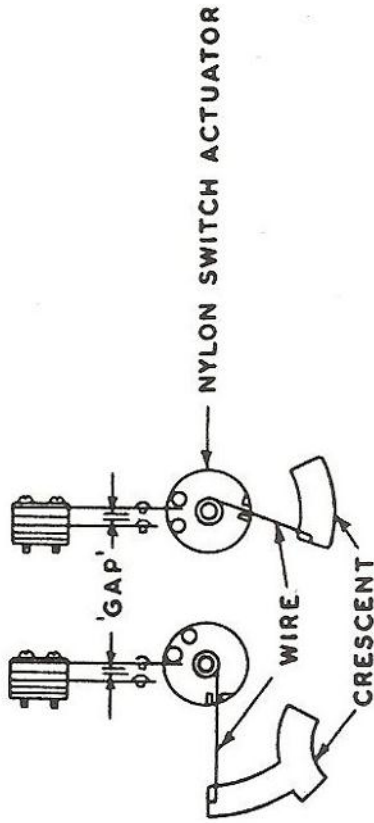
USED IN CONJUNCTION WITH 5¢ RELAY FOR "2 COINS - 1 PLAY" FEATURE.

IN HOLD CIRCUIT TO 5¢ RELAY COIL.



## 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.

### 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.

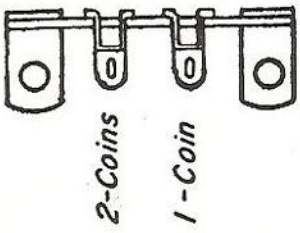
### LEG LEVELERS:

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



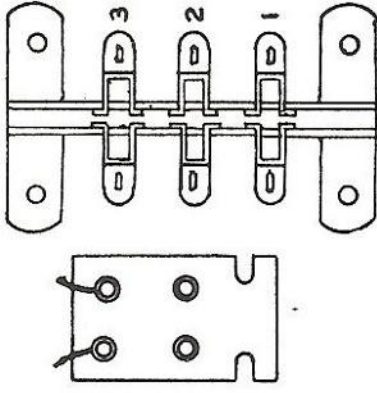
**ADJUSTMENTS ON MECHANISM PANEL**

**5¢ Adjustment**



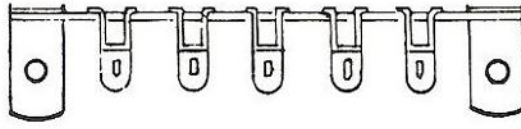
IN "2COINS FOR 1 PLAY", CIRCUIT TO COIN RELAY PASSES THRU SW. ON ALTERNATOR UNIT.

**10¢ Adjustment**



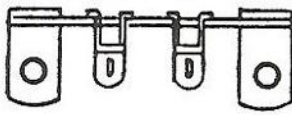
PROVIDES 1, 2 OR 3 PLAYS FOR ONE COIN.

**25¢ Adjustment**

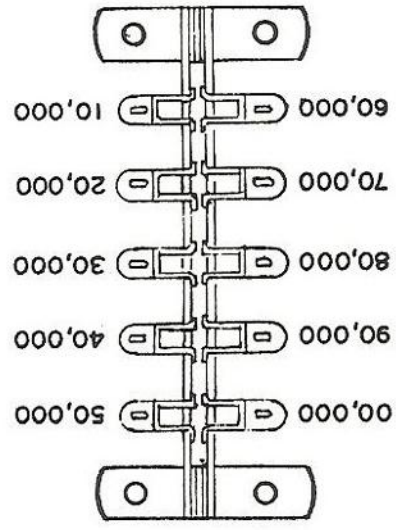


PROVIDES 2, 3, 4, 5 OR 6 PLAYS FOR 25¢.

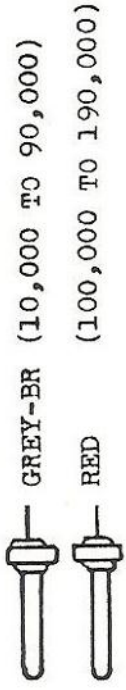
**Motor Service Jack**



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



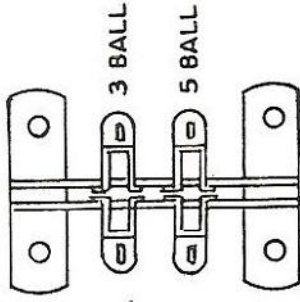
**Hi-Score Adjustment**



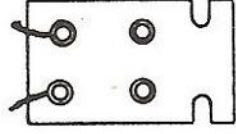
INSERT PLUGS INTO 10 POINT FEMALE AT DESIRED POSITIONS.

EXAMPLE:  
 GREY-BR INTO 30,000 SCORES AT 30,000.  
 RED INTO 00,000 SCORES AT 100,000.  
 RED INTO 30,000 SCORES AT 130,000.  
 RED INTO 90,000 SCORES AT 190,000.

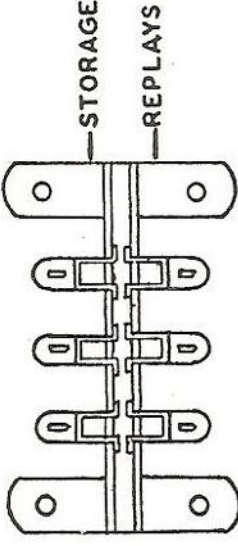
**No. of Balls Adjustment**



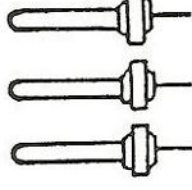
Plug changes 3 to 5 ball play, or vice versa.



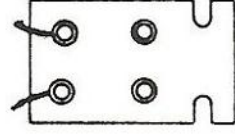
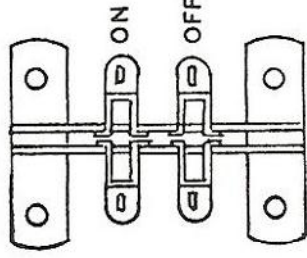
**FEATURE ADJ.**



INSERT ONE PHONE TIP FOR EACH REPLAY OR EXTRA BALL REQUIRED WHEN MAKING A "SPECIAL". (SEE "REPLAY-ADD-A-BALL-NOVELTY" ADJUSTMENT.)

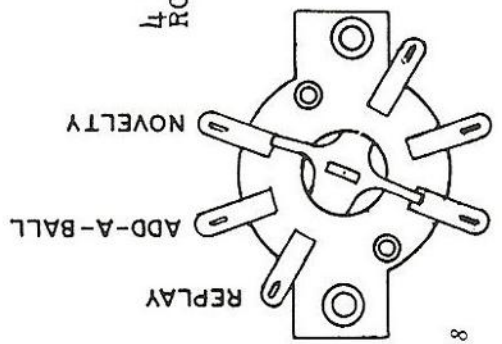


**NO. MATCH ADJ.**



IN "ON" POSITION, A NUMBER MATCH LITE WILL APPEAR WHEN GAME IS OVER. TO AWARD REPLAYS, WHEN NUMBER IS MATCHED, "REPLAY-ADD-A-BALL-NOVELTY" ADJUSTMENT MUST BE IN REPLAY POSITION. IF IT IS IN "ADD A BALL" OR "NOVELTY" POSITION, NUMBER MATCH ADJUSTMENT MUST BE TURNED TO "OFF".

**GAME ADJUSTMENT**



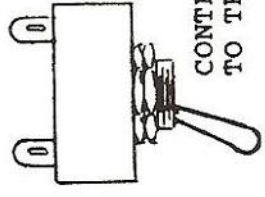
4 HIGH STACK ROTARY SWITCH

**LOCATED IN BACKBOX**

IN "REPLAY" POSITION, HI SCORES AND NO. MATCH WILL ADVANCE REPLAY UNIT. A "SPECIAL" WILL SCORE 1, 2 OR 3 REPLAYS (SEE FEATURE ADJUSTMENT JACK). OTHER REEL VALUES, AS INDICATED ON SCORE CARD, WILL ADVANCE BALL COUNT UNIT 1 OR 2 STEPS. IN "ADD A BALL" POSITION, HI SCORES AND REEL VALUES WILL ADVANCE BALL COUNT UNIT 1, 2 OR 3 STEPS AS INDICATED ON SCORE CARD. NO. MATCH ADJ. SHOULD BE "OFF". IN NOVELTY PLAY, REEL VALUES WILL ADVANCE 10,000 POINT DRUM UNIT 1, 2 OR 3 TIMES, AS INDICATED ON SCORE CARD. NO. MATCH ADJ. SHOULD BE "OFF".

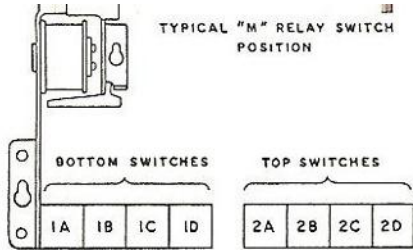
**MASTER ON-OFF SW.**

(Located under front of Cabinet)



CONTROLS POWER TO TRANSFORMER

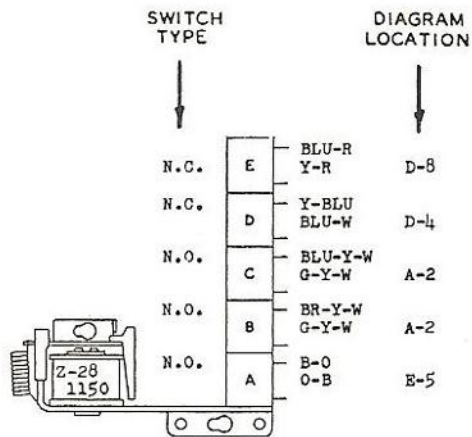




## RELAYS & SWITCHES LOCATED ON MECHANISM PANEL

### LOCK RELAY

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



ENERGIZES GAME-OVER RELAY (TRIP COIL).

IN CIRCUIT TO RESET RELAY.

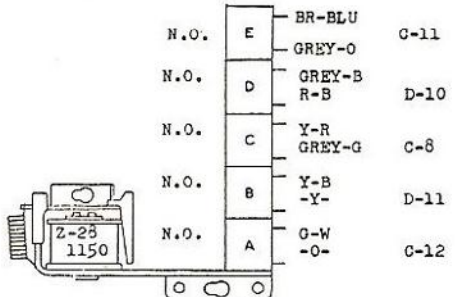
6 VOLTS FROM TRANSFORMER TO LITES.

6 VOLTS FROM TRANSFORMER TO LITES.

IN HOLD CIRCUIT TO THIS RELAY.

### BALL INDEX RELAY

IS ENERGIZED BY 100 POINT OR 1,000 POINT RELAY---ALSO BY OUTHOLE RELAY, THRU SWITCH ON GAME-OVER RELAY.



IN SERIES WITH SWITCH 1A ON SPECIAL RELAY.

IN SERIES WITH SWITCH B ON OUTHOLE RELAY.

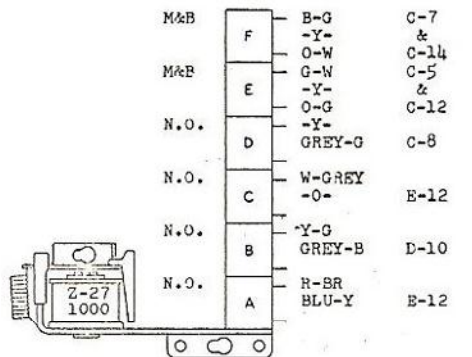
IN CIRCUIT TO BALL COUNT RESET COIL AND GAME-OVER RELAY.

ENERGIZES GAME RELAY (TRIP COIL).

IN HOLD CIRCUIT TO THIS RELAY.

### OUTHOLE RELAY

IS ENERGIZED BY OUTHOLE SWITCH, THRU END-OF-STROKE SWITCH ON BALL COUNT UNIT.



OPENS IN HOLD CIRCUIT TO "ON GREEN" AND "ON YELLOW" RELAYS, AND CLOSSES TO "DOWN POST" COIL.

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

IN CIRCUIT TO BALL RELEASE COIL---ALSO IN SERIES WITH SWITCH C ON BALL INDEX RELAY.

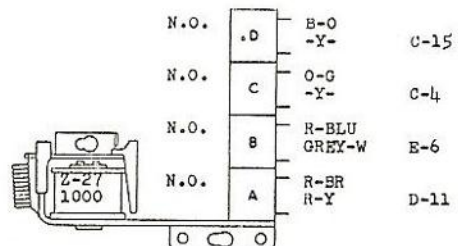
ENERGIZES BALL INDEX RELAY, THRU SWITCH ON GAME-OVER RELAY.

IN NO. MATCH CIRCUIT TO REPLAY S.U. COIL.

IN HOLD CIRCUIT TO THIS RELAY.

### EJECT RELAY

IS ENERGIZED BY EJECT POCKET SWITCHES.



IN CIRCUITS TO COLLECT REEL VALUES ON PLAYFIELD.

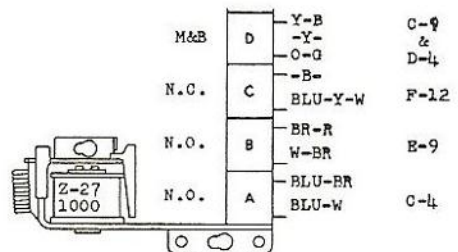
RUNS SCORE MOTOR.

PULSES EJECT COILS AT SCORE MOTOR CAM SWITCH 4D.

IN HOLD CIRCUIT TO THIS RELAY.

### RESET RELAY

IS ENERGIZED BY SWITCH C ON COIN RELAY.



OPENS IN HI-SCORE CIRCUIT TO REPLAY S.U. AND CLOSSES TO RUN SCORE MOTOR.

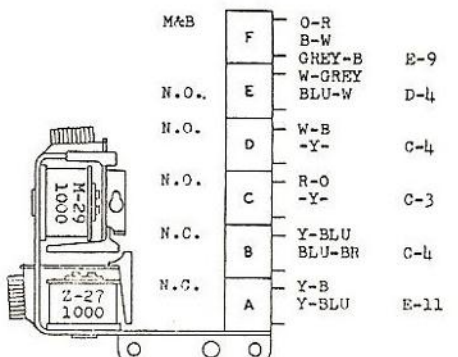
OPENS CIRCUIT TO PLAYFIELD SWITCHES.

PULSES SCORE RESET RELAY, THRU IMPULSE CAM SWITCH B.

IN HOLD CIRCUIT TO THIS RELAY.

### GAME RELAY INTERLOCK

LATCH COIL IS ENERGIZED BY SWITCH D ON COIN RELAY WHEN BALL COUNT UNIT IS IN ZERO POSITION. TRIP COIL IS ENERGIZED BY BALL INDEX RELAY OR GAME-OVER RELAY.



OPENS IN CIRCUIT TO BALL COUNT S.U. COIL AND CLOSSES TO BALL COUNT RESET COIL.

IN CIRCUIT TO COIN RELAY AND COIN LOCKOUT COIL.

IN HOLD CIRCUIT TO COIN RELAY, THRU 3-5 BALL ADJUSTMENT JACK.

IN HOLD CIRCUIT TO COIN RELAY, THRU 3-5 BALL ADJUSTMENT JACK.

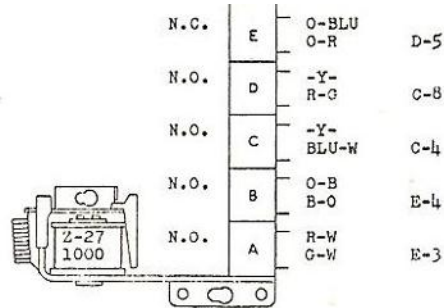
IN SERIES WITH SWITCH D ON LOCK RELAY.

CIRCUIT TO GAME RELAY (TRIP COIL), THRU EITHER BALL INDEX RELAY OR GAME-OVER RELAY.



### COIN RELAY

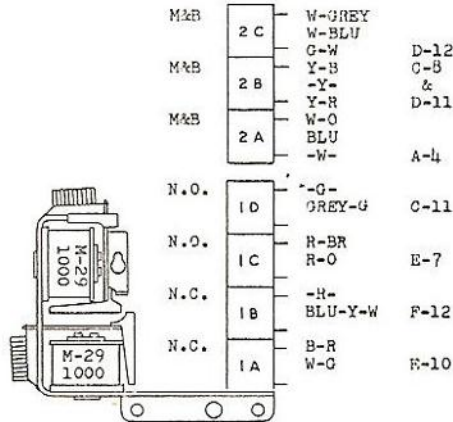
IS ENERGIZED BY COIN SWITCH---ALSO BY REPLAY BUTTON SWITCH, THRU REPLAY UNIT ZERO SWITCH.



OPENS CIRCUIT TO KNOCKER COIL.  
 IN CIRCUIT TO GAME RELAY AND GAME OVER RELAY (LATCH COILS); ALSO TO BALL COUNT UNIT S.U. & RESET COILS.  
 ENERGIZES RESET RELAY.  
 ENERGIZES LOCK RELAY.  
 IN HOLD CIRCUIT TO THIS RELAY.

### GAME OVER RELAY INTERLOCK

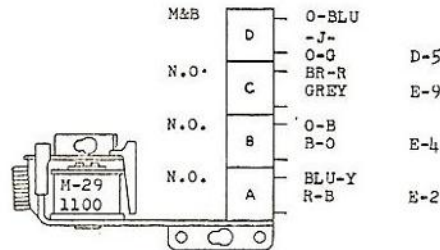
LATCH COIL IS ENERGIZED BY SWITCH D ON COIN RELAY---ALSO BY OUTHOLE AND BALL INDEX RELAYS, THRU BALL COUNT UNIT DISC.  
 TRIP COIL IS ENERGIZED BY LOCK RELAY OR TILT SWITCHES---ALSO BY OUTHOLE AND BALL INDEX RELAYS, THRU WIPER FINGERS ON BALL COUNT UNIT DISC (FIRST AND ZERO POSITION).



OPENS IN CIRCUIT TO OUTHOLE RELAY AND CLOSSES TO BALL INDEX RELAY.  
 OPENS IN CIRCUIT TO TRIP COIL ON THIS RELAY AND CLOSSES TO TRIP COIL ON GAME RELAY.  
 OPENS IN CIRCUIT TO PLAYFIELD LITTS AND CLOSSES TO TILT, GAME-OVER AND NO. MATCH LITES.  
 IN CIRCUIT TO PULSE LEFT AND RIGHT REELS, THRU SWITCH D ON OUTHOLE RELAY.  
 ENERGIZES POST RELAY.  
 IN SERIES WITH SWITCH D ON RESET RELAY.  
 OPENS NO. MATCH, HI SCORE AND "SPECIAL" CIRCUITS.

### 10¢ RELAY

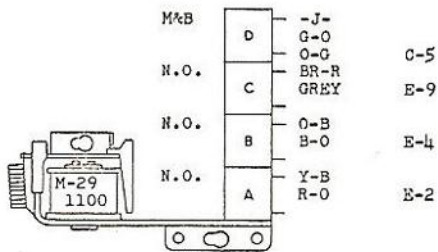
IS ENERGIZED BY 10¢ COIN SWITCH, IF 10¢ ADJUSTMENT JACK IS IN "2 PLAYS" OR "3 PLAYS" POSITION.



OPENS IN CIRCUIT TO KNOCKER COIL AND CLOSSES TO RUN SCORE MOTOR.  
 PULSES REPLAY S.U. COIL, THRU IMPULSE CAM SWITCH B.  
 ENERGIZES LOCK RELAY.  
 IN HOLD CIRCUIT TO THIS RELAY.

### 25¢ RELAY

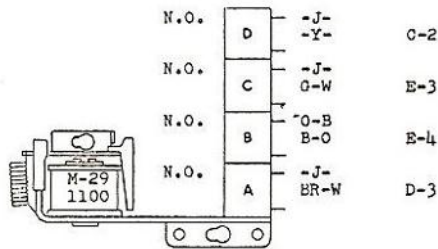
IS ENERGIZED BY 25¢ COIN SWITCH.



OPENS IN CIRCUIT TO KNOCKER COIL AND CLOSSES TO RUN SCORE MOTOR.  
 PULSES REPLAY S.U. COIL, THRU IMPULSE CAM SWITCH B.  
 ENERGIZES LOCK RELAY.  
 IN HOLD CIRCUIT TO THIS RELAY.

### 5¢ RELAY

IS ENERGIZED BY 5¢ COIN SWITCH, IF 5¢ ADJUSTMENT JACK IS IN "2 COINS FOR 1 PLAY" POSITION.

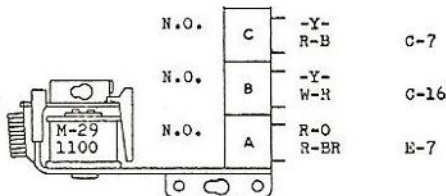


ENERGIZES ALTERNATOR UNIT COIL.  
 ENERGIZES COIN RELAY, THRU SWITCH ON ALTERNATOR UNIT.  
 ENERGIZES LOCK RELAY.  
 IN HOLD CIRCUIT TO THIS RELAY.

### LOCATED ON PLAYFIELD

#### POST RELAY

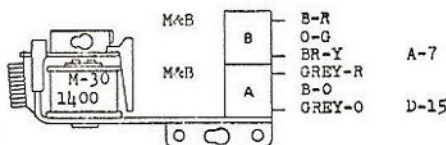
IS ENERGIZED BY GAME-OVER RELAY OR "DOWN POST" ROLLOVER BUTTON.



ENERGIZES DOWN POST COIL.  
 PULSE 100 POINT RELAY.  
 IN HOLD CIRCUIT TO THIS RELAY.

#### 3000 RELAY

IS ENERGIZED BY LEFT, CENTER AND RIGHT REEL DISCS ON PLAYFIELD. (LINING UP PROPER SYMBOLS).  
 THE BAR RELAY, WHEN ENERGIZED, COMPLETES CIRCUIT THRU LEFT AND CENTER REEL DISCS.

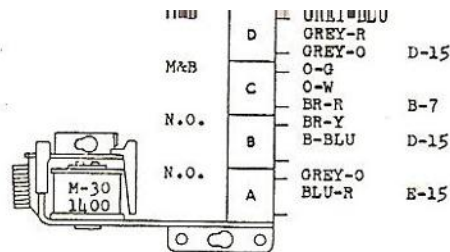


OPENS IN CIRCUIT TO '500' LITE AND CLOSSES TO '3000' LITE.  
 OPENS IN SERIES CIRCUIT WITH SWITCH D ON 4000 RELAY AND CLOSSES TO PULSE 1000 POINT RELAY.



### 4000 RELAY

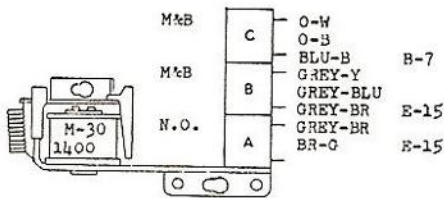
IS ENERGIZED BY LEFT, CENTER AND RIGHT REEL DISCS ON PLAYFIELD. (LINING UP PROPER SYMBOLS).  
BAR RELAY, WHEN ENERGIZED, COMPLETES CIRCUIT THRU LEFT AND CENTER REEL DISCS.



OPENS IN SERIES WITH SWITCH B ON 5000 RELAY AND CLOSES TO ENERGIZE BALL COUNT UNIT.  
IN SERIES WITH SWITCH B ON 3000 RELAY---CLOSES TO 4000 LITE.  
IN CIRCUIT TO 1000 POINT RELAY.  
IN SERIES WITH SWITCH D ON THIS RELAY.

### 5000 RELAY

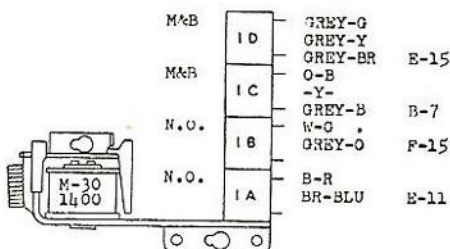
IS ENERGIZED BY LEFT, CENTER AND RIGHT REEL DISCS ON PLAYFIELD. (LINING UP PROPER SYMBOLS).  
BAR RELAY, WHEN ENERGIZED, COMPLETES CIRCUIT THRU LEFT AND CENTER REEL DISCS.



IN SERIES WITH SWITCH C ON 4000 RELAY---CLOSES TO "5000" LITE.  
OPENS IN SERIES CIRCUIT WITH SW.1D ON SPECIAL RELAY AND CLOSES TO ENERGIZE BALL COUNT UNIT.  
IN SERIES WITH SWITCH B ON THIS RELAY.

### SPECIAL RELAY

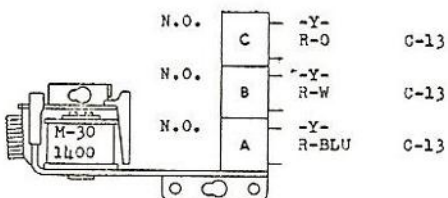
IS ENERGIZED BY LEFT, CENTER AND RIGHT REEL DISCS ON PLAYFIELD. (LINING UP PROPER SYMBOLS AS SHOWN ON SCORE CARD).



OPENS IN CIRCUIT TO 100 POINT RELAY AND CLOSES TO SCORE "SPECIAL" THRU REPLAY-ADD A BALL ADJUSTMENT.  
IN SERIES WITH SWITCH C ON 5000 RELAY---CLOSES TO "SPECIAL" LITE.  
SCORES 1, 2 OR 3 'SPECIALS', THRU 'REPLAY-ADD A BALL-NOVELTY' ADJUSTMENT.  
PULSES CENTER REEL COIL, THRU SWITCH ON BALL INDEX RELAY

### BAR RELAY

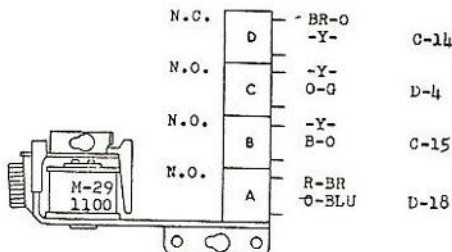
IS ENERGIZED BY WIPER FINGERS ON RIGHT REEL DISC.



IN CIRCUIT TO 3000 RELAY, THRU CENTER AND LEFT REEL DISCS.  
IN CIRCUIT TO 4000 RELAY, THRU CENTER AND LEFT REEL DISCS.  
IN CIRCUIT TO 5000 RELAY, THRU CENTER AND LEFT REEL DISCS.

### ROLL OVER RELAY

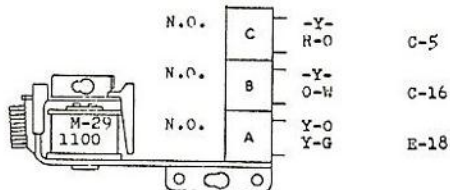
IS ENERGIZED BY LEFT AND RIGHT TOP AND BOTTOM ROLLOVER SWITCHES.



OPENS CIRCUITS TO LEFT, CENTER AND RIGHT ADVANCE RELAYS.  
RUNS SCORE MOTOR.  
IN SERIES WITH SWITCH A ON 3000 RELAY, OR 1B ON SPECIAL RELAY.  
IN HOLD CIRCUIT TO THIS RELAY.

### NO. 5 BUMPER RELAY

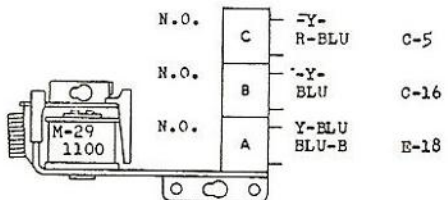
IS ENERGIZED BY LEFT BOTTOM JET BUMPER SWITCH.



ENERGIZES LEFT BOTTOM JET BUMPER COIL.  
IN SERIES WITH SWITCH E ON "ON GREEN RELAY".  
IN HOLD CIRCUIT TO THIS RELAY.

### NO. 4 BUMPER RELAY

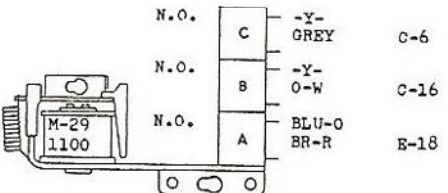
IS ENERGIZED BY LEFT TOP JET BUMPER SWITCH.



ENERGIZES LEFT TOP JET BUMPER COIL.  
IN SERIES WITH SWITCH D ON "ON YELLOW RELAY".  
IN HOLD CIRCUIT TO THIS RELAY.

### NO. 3 BUMPER RELAY

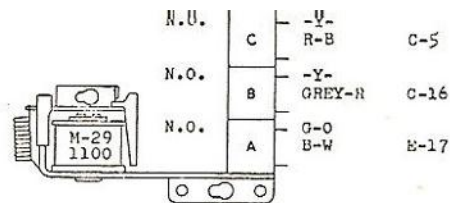
IS ENERGIZED BY RIGHT TOP JET BUMPER SWITCH.



ENERGIZES RIGHT TOP JET BUMPER COIL.  
IN SERIES WITH SWITCH E ON "ON GREEN RELAY".  
IN HOLD CIRCUIT TO THIS RELAY.

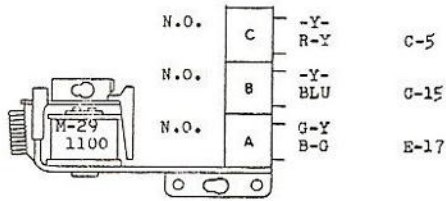


**NO. 2 BUMPER RELAY**  
IS ENERGIZED BY CENTER JET BUMPER SWITCH.



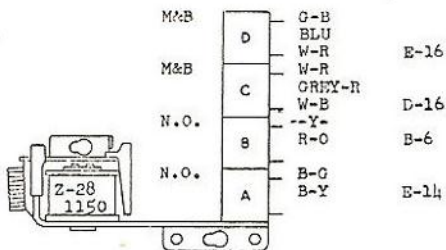
ENERGIZES CENTER JET BUMPER COIL.  
IN SERIES WITH SWITCH C ON "ON YELLOW RELAY".  
IN HOLD CIRCUIT TO THIS RELAY.

**NO. 1 BUMPER RELAY**  
IS ENERGIZED BY RIGHT BOTTOM JET BUMPER SWITCH.



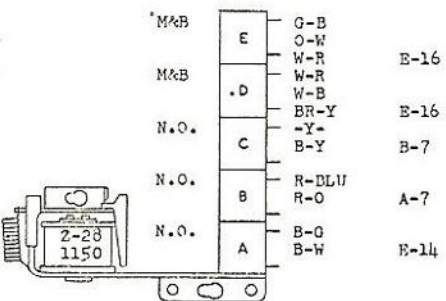
ENERGIZES RIGHT BOTTOM JET BUMPER COIL.  
IN SERIES WITH SWITCH D ON "ON YELLOW RELAY".  
IN HOLD CIRCUIT TO THIS RELAY.

**ON YELLOW RELAY**  
IS ENERGIZED BY LEFT TOP EJECT POCKET SWITCH.



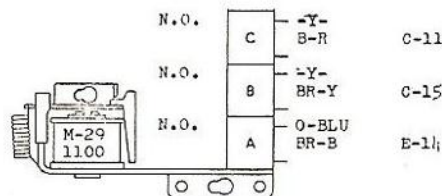
OPENS IN CIRCUIT TO 10 POINT RELAY AND CLOSSES TO 100 POINT RELAY.  
OPENS IN CIRCUIT TO 100 POINT RELAY AND CLOSSES IN SERIES WITH SWITCH D ON "ON GREEN RELAY".  
TO LEFT TOP AND RIGHT BOTTOM JET BUMPER LITES; ALSO IN SERIES WITH SWITCH B ON "ON GREEN RELAY".  
IN HOLD CIRCUIT TO THIS RELAY.

**ON GREEN RELAY**  
IS ENERGIZED BY RIGHT TOP EJECT POCKET SWITCH.



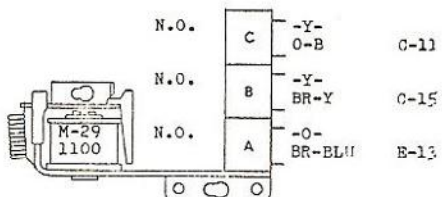
OPENS IN CIRCUIT TO 10 POINT RELAY AND CLOSSES TO 100 POINT RELAY.  
OPENS IN CIRCUIT TO 100 POINT RELAY AND CLOSSES TO 1000 POINT RELAY.  
TO LEFT BOTTOM AND RIGHT TOP JET BUMPER LITES.  
TO CENTER JET BUMPER LITE.  
HOLD CIRCUIT TO THIS RELAY, THRU SWITCH ON OUTHOLE RELAY.

**CENTER ADVANCE RELAY**  
IS ENERGIZED BY CENTER TOP ROLLOVER BUTTON, CENTER TOP TARGET, LEFT SIDE ROLLOVER OR RIGHT SIDE ROLLOVER SWITCHES.



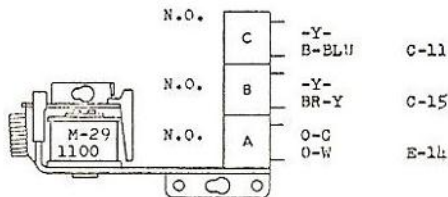
PULSES CENTER REEL.  
PULSES 1000 POINT RELAY.  
HOLD CIRCUIT TO THIS RELAY, THRU END-OF-STROKE SWITCH ON CENTER REEL.

**LEFT ADVANCE RELAY**  
IS ENERGIZED BY LEFT TOP ROLLOVER BUTTON, LEFT TOP TARGET OR LEFT CENTER TARGET SWITCHES.



PULSES LEFT REEL.  
PULSES 1000 POINT RELAY.  
HOLD CIRCUIT TO THIS RELAY, THRU E.O.S. SWITCH ON LEFT REEL.

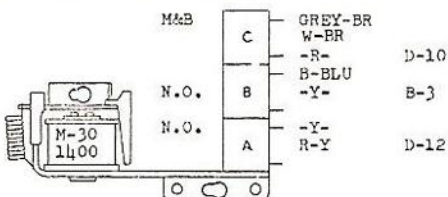
**RIGHT ADVANCE RELAY**  
IS ENERGIZED BY RIGHT TOP ROLLOVER BUTTON, RIGHT TOP TARGET OR RIGHT CENTER TARGET SWITCHES.



PULSES RIGHT REEL.  
PULSES 1000 POINT RELAY.  
HOLD CIRCUIT TO THIS RELAY, THRU E.O.S. SWITCH ON RIGHT REEL.

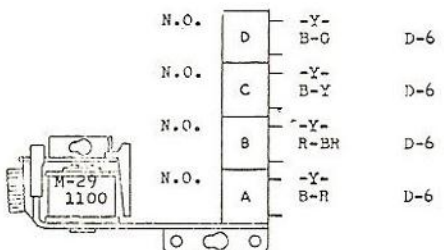
**LOCATED IN BACKBOX**

**100,000 RELAY**  
IS ENERGIZED BY END-OF-STROKE SWITCH ON 10,000 POINT DRUM UNIT, THRU 9TH POSITION SWITCH ON SAME UNIT.



IN HI-SCORE CIRCUITS TO ENERGIZE REPLAY OR BALL COUNT UNIT S.U.  
TO "100,000" LITE.  
HOLD CIRCUIT TO THIS RELAY.

**SCORE RESET RELAY**  
IS PULSED BY IMPULSE CAM SWITCH B, THRU SWITCH ON RESET RELAY.

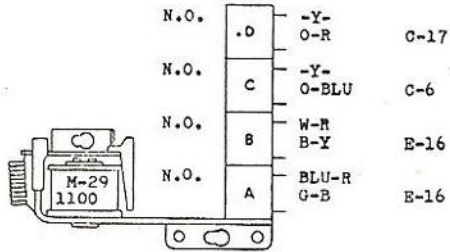


PULSES 10,000 POINT DRUM UNIT, THRU ZERO SWITCH ON THAT UNIT.  
PULSES 1,000 POINT DRUM UNIT, THRU ZERO SWITCH ON THAT UNIT.  
PULSES 100 POINT DRUM UNIT, THRU ZERO SWITCH ON THAT UNIT.  
PULSES 10 POINT DRUM UNIT, THRU ZERO SWITCH ON THAT UNIT.



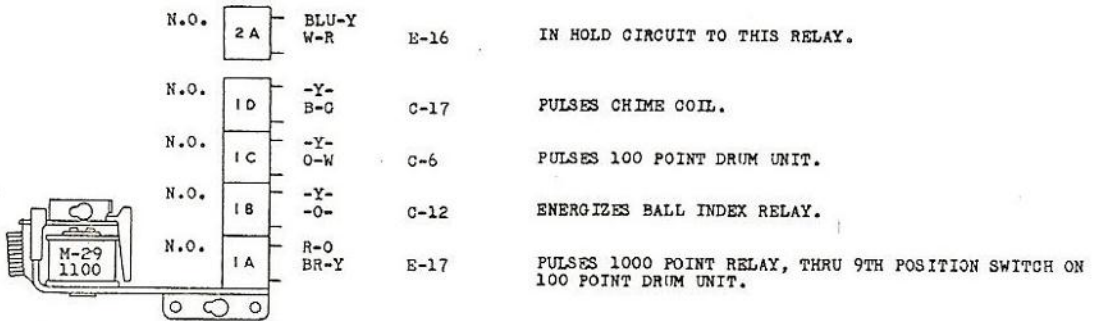
### 10 POINT RELAY

IS PULSED BY STANDUP SWITCHES, KICKER SWITCHES AND BUMPER RELAYS 1,3,4 OR 5.



### 100 POINT RELAY

IS PULSED BY BUMPER RELAYS (AS INDICATED BY JET BUMPERS), AND BY IMPULSE CAM SWITCH C WHEN EJECT RELAY OR ROLLOVER RELAY IS ENERGIZED.



### 1000 POINT RELAY

IS ENERGIZED BY 3,000 RELAY, 4,000 RELAY, 5,000 RELAY, SPECIAL RELAY OR NO. 2 BUMPER RELAY.

