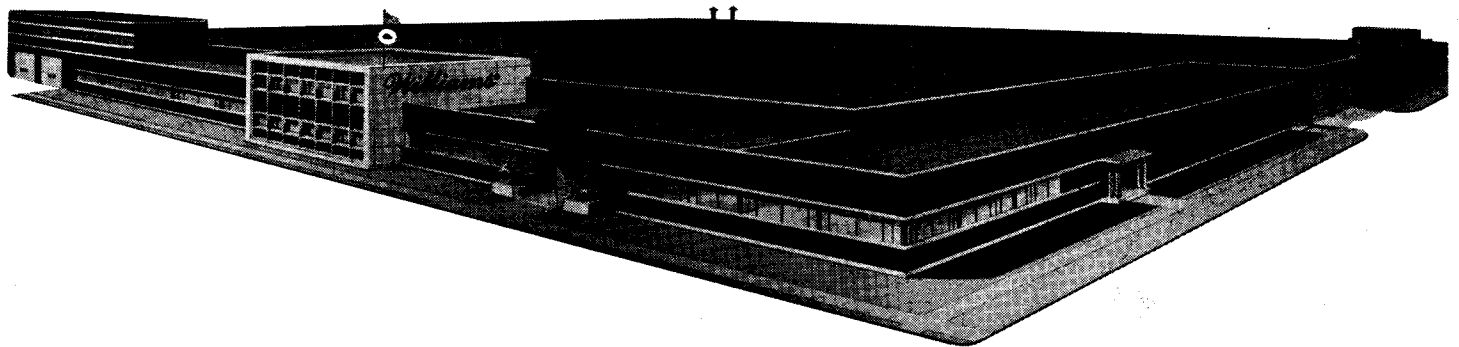


# Instruction Manual

*for*

# TOUCHDOWN



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

3401 N. California Ave.  
Phone 267-2240

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

# **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.**

## **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.**

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

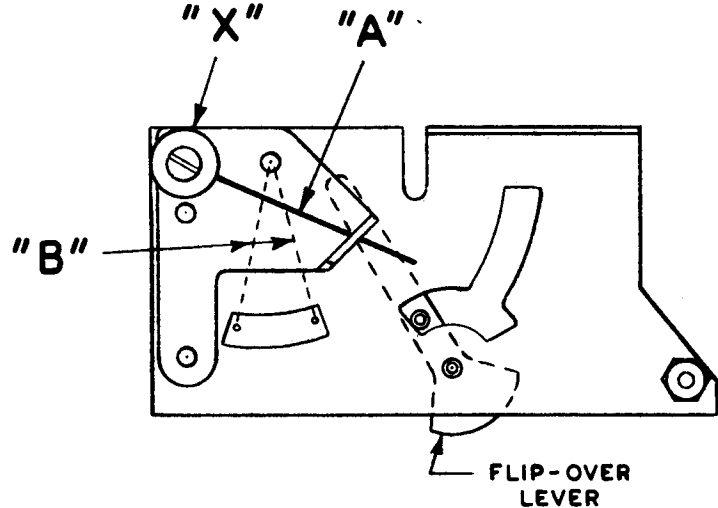
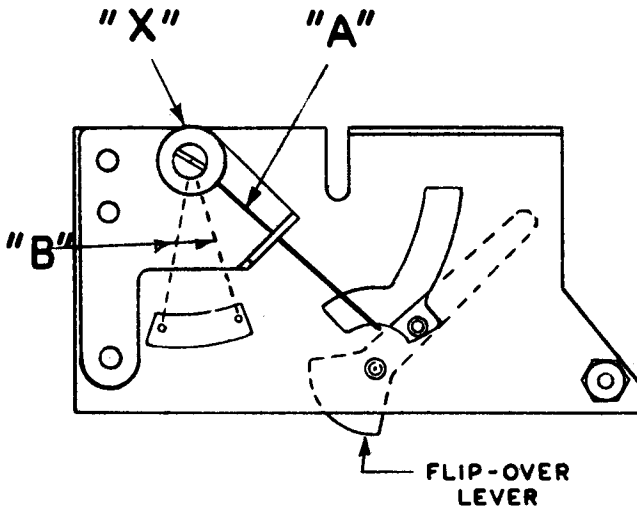
FOR 1 COIN-FOR 1 PLAY

OR

2 COINS - FOR 1 PLAY

**FIGURE 1**

**FIGURE 2**



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

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

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

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

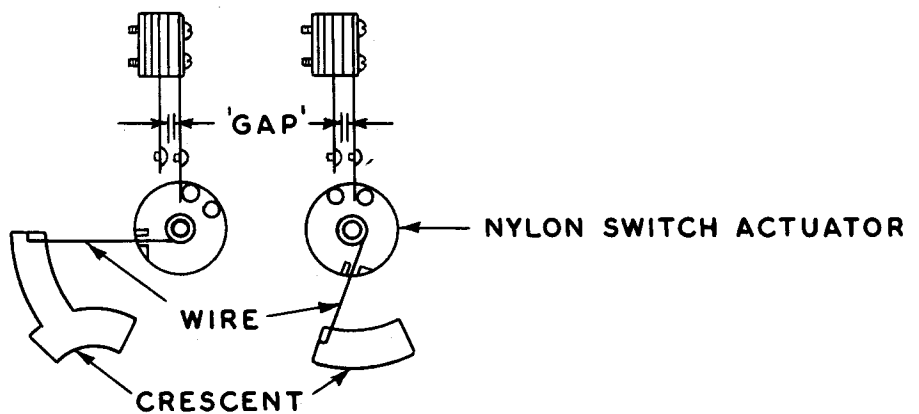
## NOTE:

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

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

# INSTRUCTIONS FOR COIN TRIP SWITCH ADJUSTMENT

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



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

or

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

## SWITCH ADJUSTMENT

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

# WARRANTY

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

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

## IMPORTANT NOTICE

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

### UNIT PARTS LIST FOR "TOUCHDOWN"

UNIT NAME	CONTACT DISC	WIPER ASS'Y.	RATCHET GEAR ASS'Y.	MOTORS
REPLAY	—	—	A-6400	14A-7805 (60 CYCLE)
NO. MATCH	C-6879	C-6520-10	A-6401	14A-7806 (50 CYCLE)
BALL COUNT	C-6932	C-6520-5	A-6402-5	
ADVANCE	C-6417	C-6893	A-6404-21	
0 - 9	B-6297	A-6294	3C-7128	
TENS	B-6297	A-6294	3C-7128	
HUNDREDS	B-6297	A-6294	3C-7128	
THOUSANDS	B-6297	A-6294	3C-7128	
1-9 GOAL	B-6297	A-6294	3C-7128	
TENS GOAL	B-6297	A-6294	3C-7128	

"TOUCHDOWN" COIL CHART

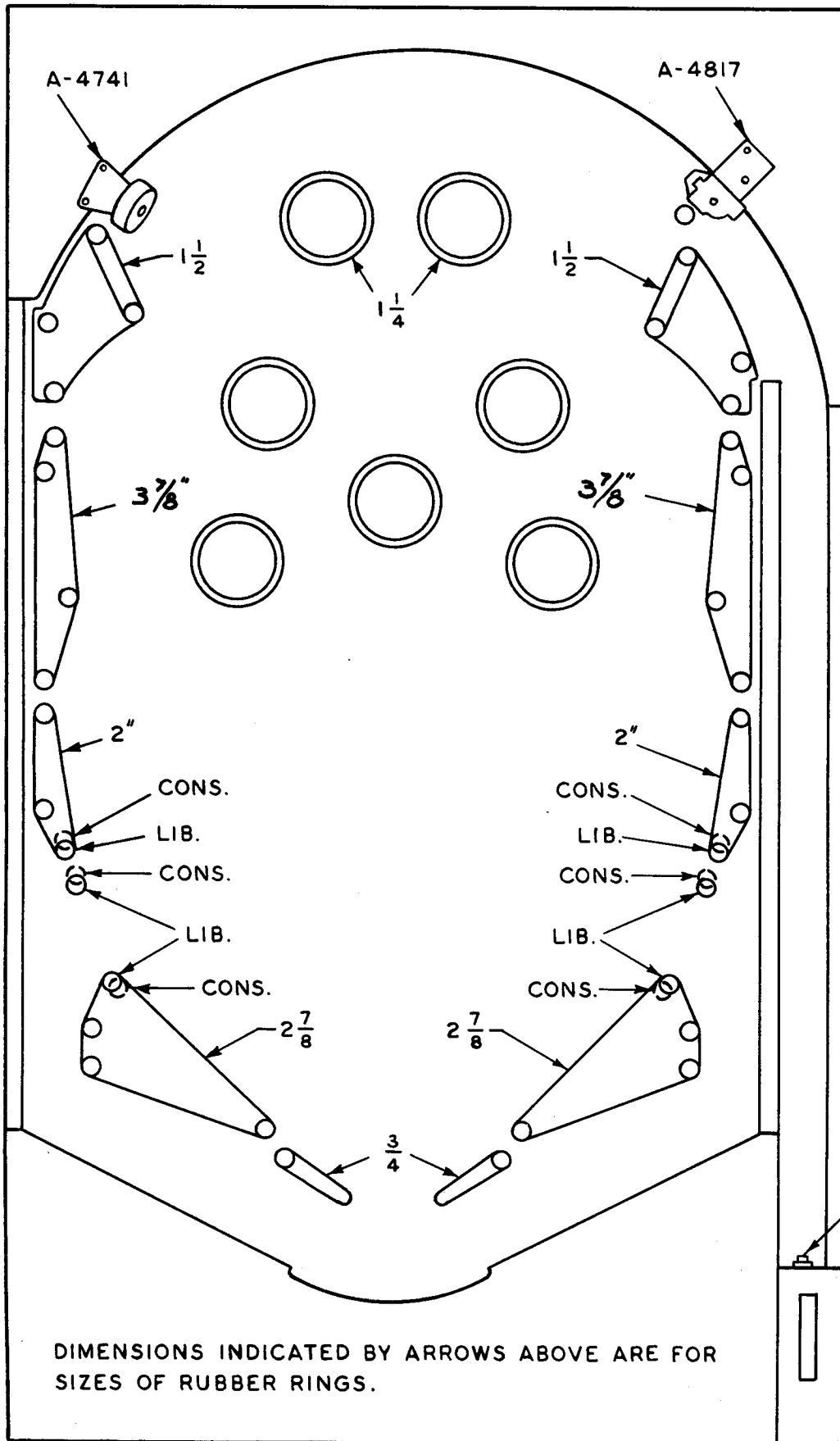
NOTICE:

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 6773	TRANSFORMER - 50 CYCLE	MECH. PANEL
B 6396	24 VOLT METER	MECH. PANEL
<u>SOLENOID COILS</u>		
A 22-550	MATCH UNIT STEP UP	INSERT
	BALL COUNT UNIT STEP UP	INSERT
	BALL RELEASE	PLAYFIELD
	ADVANCE UNIT STEP UP	INSERT
A 23-600	REPLAY UNIT STEP UP	INSERT
A2-23-750	LARGE BELL	CABINET
	KNOCKER	CABINET
B 26-800	BALL COUNT UNIT RESET	INSERT
	REPLAY UNIT RESET	INSERT
	SCORE DRUM UNITS ... (6 req'd.)	INSERT
	ADVANCE UNIT RESET	INSERT
G 22-550	JET BUMPER ... (5 req'd.)	PLAYFIELD
G 23-750	AUTO KICKERS ... (2 req'd.)	PLAYFIELD
	BALL EJECT	PLAYFIELD
FL 21-375/ 28-400	FLIPPERS ... (2 req'd.)	PLAYFIELD
<u>RELAY COILS</u>		
M 29-1000	RESET	MECH. PANEL
	GAME OVER TRIP	MECH. PANEL
	3 POINT	PLAYFIELD
	30 POINT	PLAYFIELD
M 29-1100	10¢	MECH. PANEL
	25¢	MECH. PANEL
	FOOTBALL RESET	PLAYFIELD
	NO. 1 BUMPER	PLAYFIELD
	NO. 2 BUMPER	PLAYFIELD
	NO. 3 BUMPER	PLAYFIELD
	1 POINT	INSERT
	10 POINT	INSERT
	100 POINT	INSERT
	ADVANCE	INSERT
M 30-1400	TARGET	PLAYFIELD
	NO. 1	INSERT
	NO. 2	INSERT
Mt31-1500	COIN LOCKOUT COIL	FRONT DOOR
Z 27-1000	OUTHOLE	MECH. PANEL
	GAMEOVER LATCH	MECH. PANEL
	EJECT	MECH. PANEL
	COIN	MECH. PANEL
Z 28-1150	LOCK	MECH. PANEL
	TOUCHDOWN	PLAYFIELD
	BALL INDEX	MECH. PANEL
	CHANGE	PLAYFIELD
	SPECIAL	PLAYFIELD
XM 27-675	METER COIL	MECH. PANEL

# " TOUCHDOWN " - 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

RUBBER RING NUMBERS

23A-6300	5/16"	I.D.
23A-6301	3/4"	I.D.
23A-6303	1/4"	I.D.
23A-6304	1-1/2"	I.D.
23A-6305	2"	I.D.
23A-6307	2-7/8"	I.D.
23A-6309	3 7/8"	I.D.

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

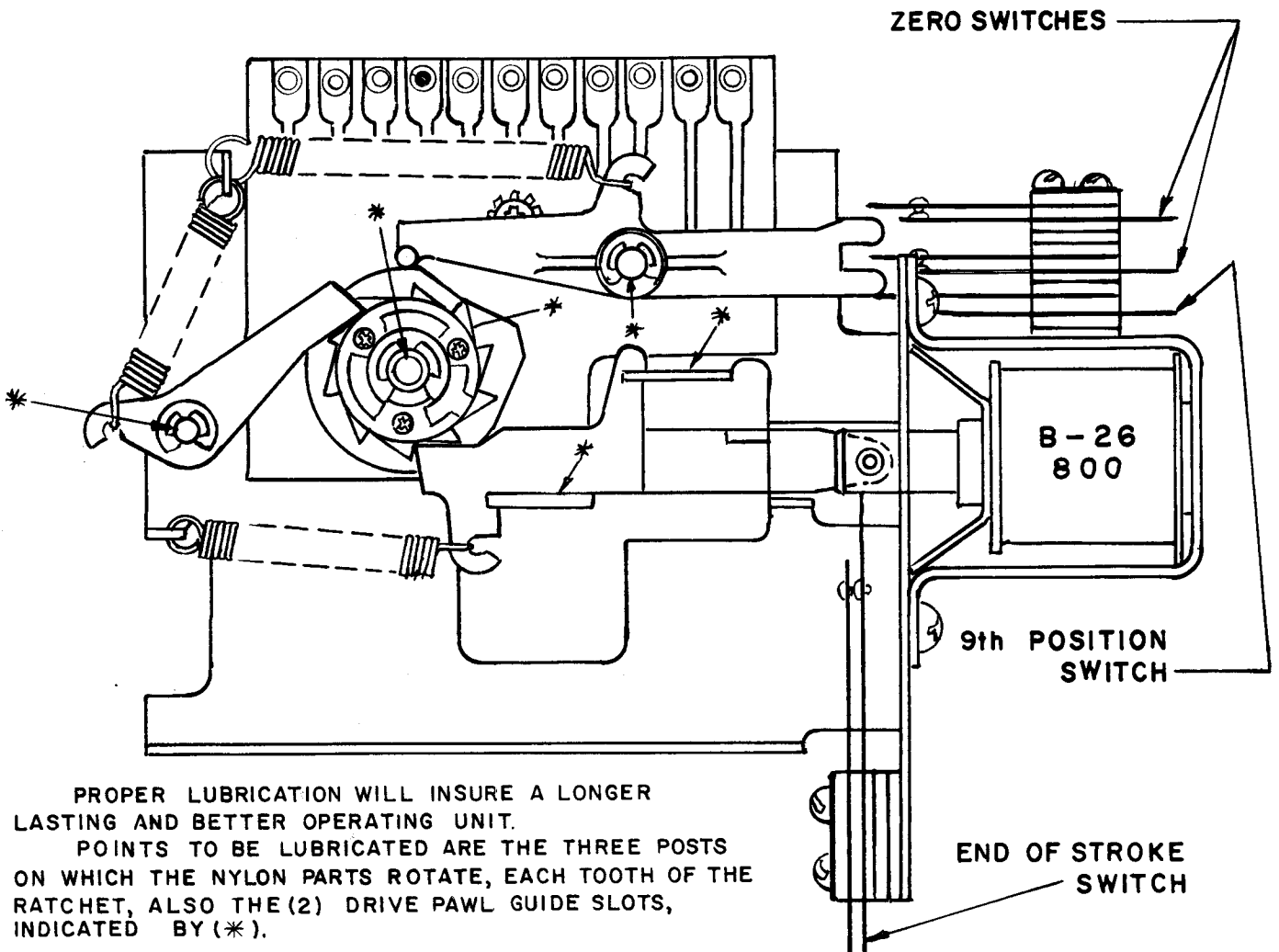
23A-6327 - BALL SHOOTER  
 RUBBER TIP

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



# SCORE DRUM UNIT

WITH PRINTED CIRCUIT AND CONTACT RING



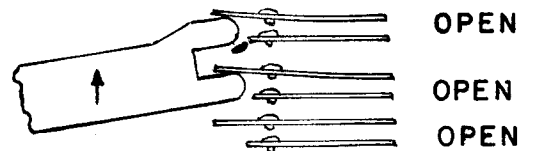
PROPER LUBRICATION WILL INSURE A LONGER LASTING AND BETTER OPERATING UNIT.

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 (\*).

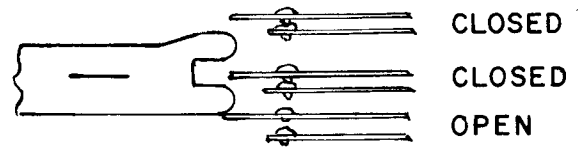
**LUBRICATION: DO NOT PUT LUBRICANT ON DRIVE ARMATURE**

## SWITCH ADJUSTMENT

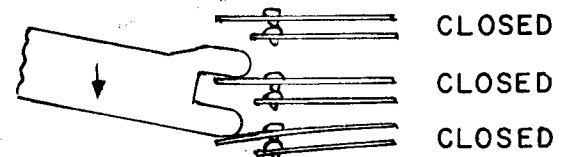
AT "0" OR INDEX POSITION ALL SWITCHES ARE OPEN AS SHOWN.



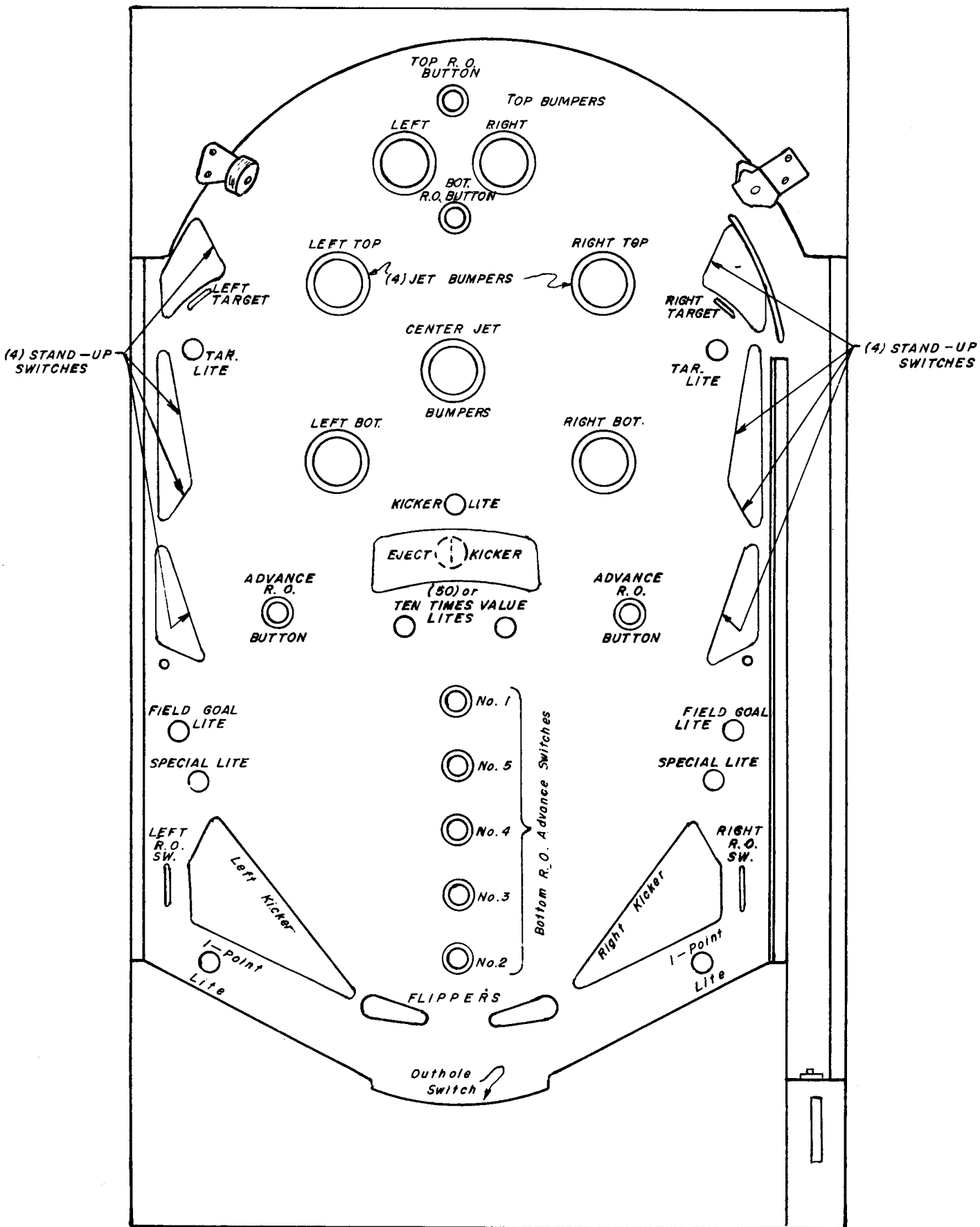
AT 1st. TO 8th. POSITION TOP SWITCHES ARE CLOSED—BOTTOM SWITCH REMAINS OPEN.



AT 9th POSITION ALL SWITCHES ARE CLOSED AS SHOWN.



# PLAYFIELD LAYOUT SHOWING LOCATION OF TARGETS, ROLL OVERS, AND SWITCHES



## "TOUCHDOWN"

### "TOUCHDOWN OPERATES AS FOLLOWS"

Adjustment in backbox controls kickoff on reset. When in "off" adjustment, football remains in position from previous game. When in "on" adjustment (game is shipped in this adjustment) football kicks off and returns, on reset, to at least the 20 yard line and can possibly return as far as the goal (touchdown - 6 points).

Anytime a touchdown is scored eject hole lites up for kickoff and football return. By going into eject hole, when lit for kickoff, football will kickoff and return at least to the 20 yard line and possibly score a touchdown.

When a touchdown is scored the two side out lanes lite up for 1 point after touchdown. Should a kickoff take place by ball going into eject hole, placing football again in play, then the 1 point after touchdown lites go out.

Whenever football reaches the 50 yard line 2 bottom out lanes alternate for a possible field goal (3 points) until touchdown is made.

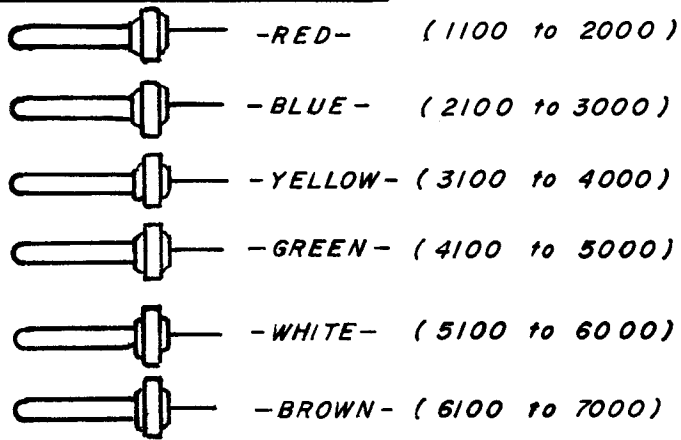
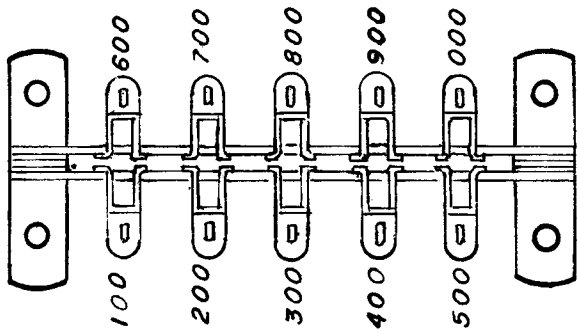
Everytime ball leaves playfield, after a touchdown has been made, football kicks off and returns at least to the 20 yard line.

When playing game with 3 balls (adjustment in backbox) the two advance targets and two bottom white advance rollover buttons advance 15 yards (3 steps) everytime they are hit until a touchdown has been made. During 5 ball play the advance is only 5 yards (1 step) until a touchdown has been made.

Two bottom out lanes alternate for **special** after 16 points are made when playing a 3 ball game and after 26 points are made when playing a 5 ball game.

Two top targets, when hit, also lite eject hole for 500 points.

# ADJUSTMENTS IN BACKBOX



## Hi-Score Adjustment

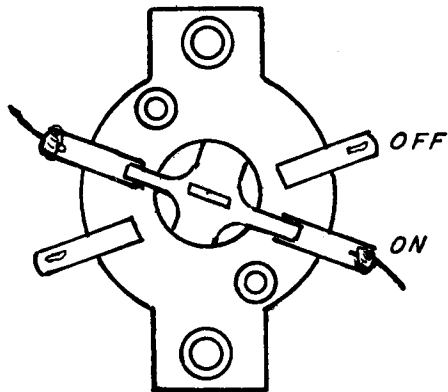
Insert plugs into 10 Point Female at desired positions.

Examples:

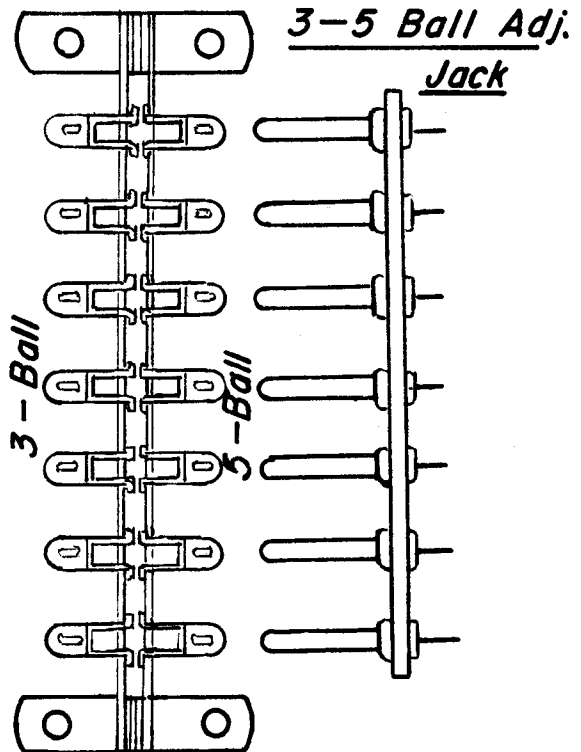
Yellow wire into 300 position scores at 3300.

Yellow wire into 000 position scores at 4000.

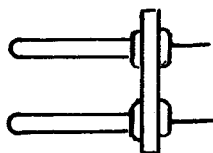
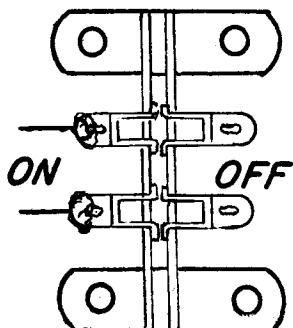
## Kickoff Adjustment on Reset



This jack controls kickoff when resetting game. In "OFF" position, football remains in place from previous game. In "ON" position, football kicks off on reset.



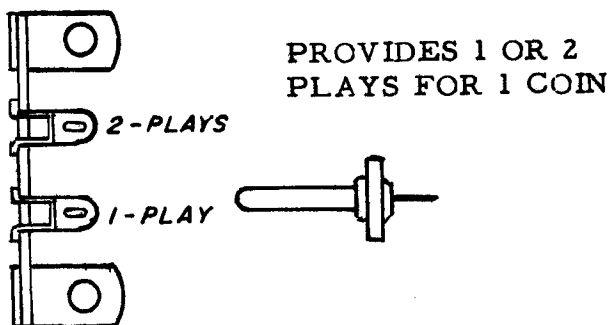
## Number Match Adjustment



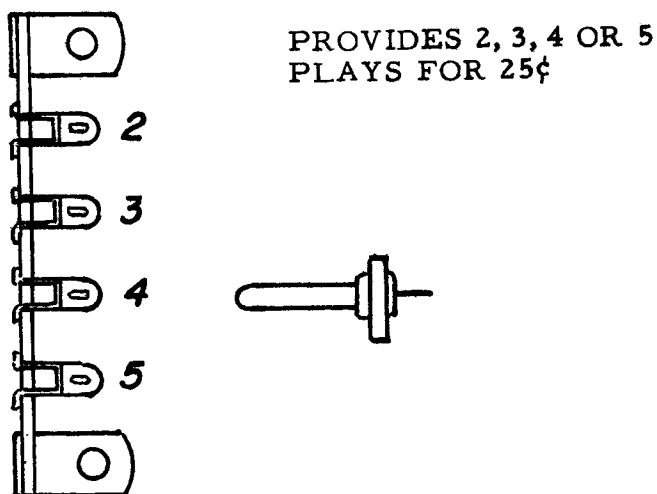
In "ON" position, number match lite will appear when game is over. This number will match the last number in point score, on the average, once every ten games. In "OFF" position, Number Match is inoperative.

# ADJUSTMENTS ON MECH. PANEL

## 10¢ Adjustment

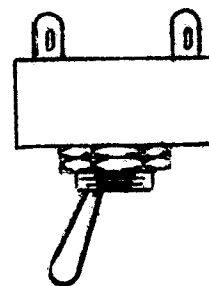


## 25¢ Adjustment



## MASTER ON-OFF SW.

(Located under front of  
Cabinet)



CONTROLS POWER  
TO TRANSFORMER

### THE POWER TRANSFORMER,

LOCATED ON PANEL. IS EQUIPPED WITH A SECONDARY TAP. IF YOUR GAME IS ON LOCATION WITH EXTREMELY LOW LINE VOLTAGE, REMOVE LEAD FROM LUG MARKED 24 VOLT AND SOLDER TO ALTERNATE LUG MARKED "HIGH". THIS WILL BOOST SECONDARY VOLTAGE BY APPROXIMATELY 4 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 OR DECREASE SCORES, RAISE REAR LEG LEVELERS TO INCREASE PITCH.

### SUGGESTED SCORE CARDS:

For 5 ball play - #335-7 More Conservative - #335-8 to #335-12 in that order.

For 3 ball play - #335-15 More Conservative - #335-16 to #335-20 in that order.

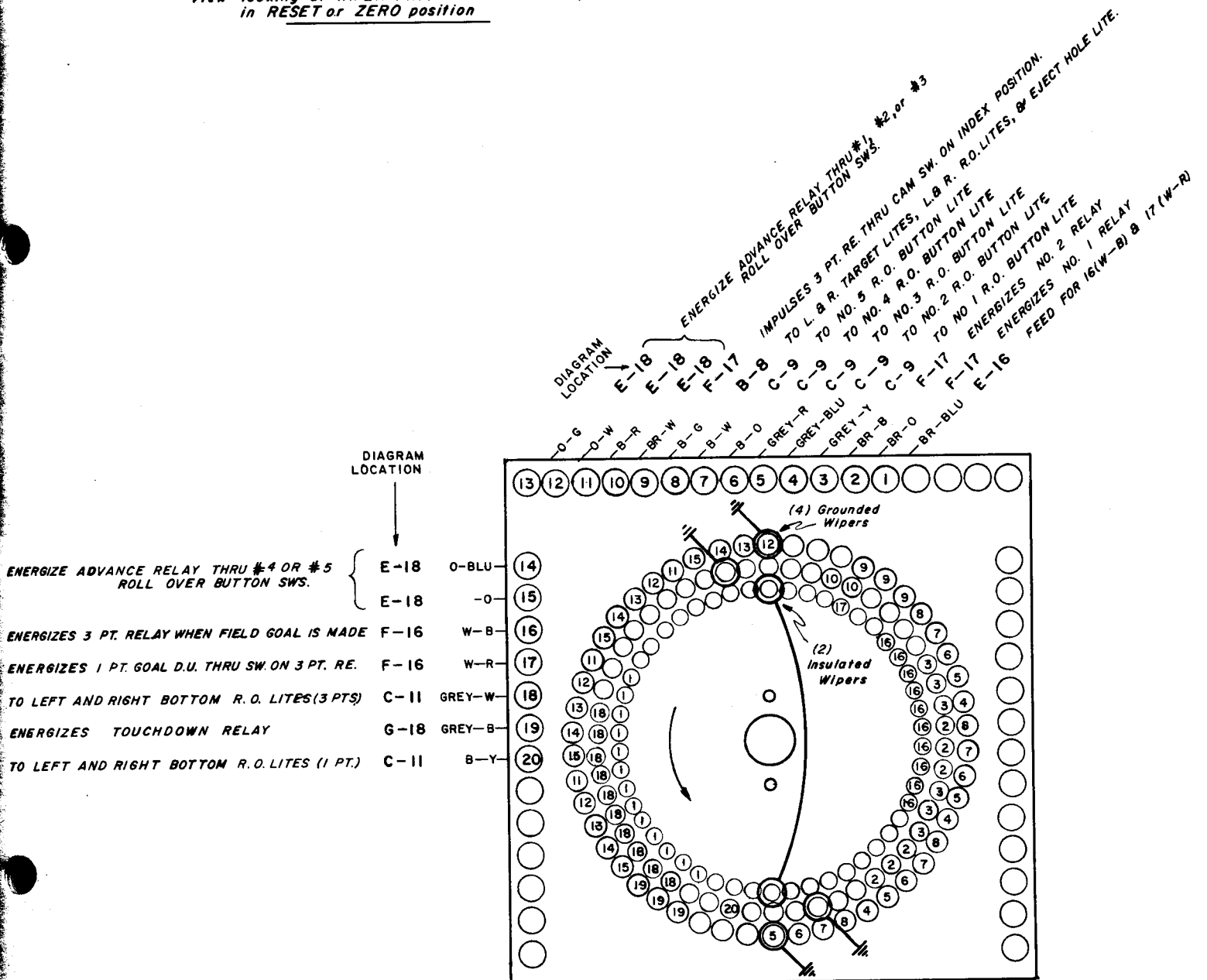
## WHAT TO DO IF:

1. Lights are out, game is inoperative:
  - a. Check A.C. cord and plug for breaks, cuts or other damage.
  - b. Check fuses, located on mechanism panel.
  - c. Check master switch, located under the front end of cabinet, on right side.
  - d. Check plugs and jacks for proper installation.
2. Lights are on, game is inoperative:
  - a. Check the 15 Amp fuse, heavy Black wire.
  - b. Check plugs and jacks.
3. Lights are out, game operates:
  - a. Check switches on, and operation of, Lock Relay.
  - b. Check the 10 Amp fuses, heavy Brown and heavy Blu wires.
  - c. Check plugs and jacks.
  - d. Check lite bulbs.
4. Coin is accepted, game does not operate:
  - a. Check coin chute and coin switch.
  - b. Check Anti-Cheat Switch, located on front door.
  - c. Check adjustment jack (one coin = one or two plays).
  - d. Check Coin Relay or 10¢ Relay Coil.
5. Field goal, as indicated, does not score 3 points:
  - a. Check switch on 30 Pt. Relay, Black-Red and Yellow.
  - b. Check Left and Right Bottom Rollover Switches.
  - c. Check Make-Break Switch on Change Relay; Brown-White, Brown-Blu, and Brown.
  - d. Check for circuit thru Advance Unit Disc; Brown-Blu to White-Black.
  - e. Check 3 Pt. Relay Coil and switches.
6. Touchdown is scored, but 6 points do not register:
  - a. Six points should be scored by energizing the 3 Pt. Relay twice. Check circuit thru Advance Unit Disc; Yellow (grounded wiper) to Brown-White.
  - b. Check normally closed switch on index cam of Score Motor; Brown-White to White-Black.
  - c. Check 3 Pt. Relay Coil and switches.
7. After a touchdown is scored, ball falls into eject hole but Advance Unit does not reset:
  - a. Check Advance Unit Reset Coil.
  - b. Check Make-Break Switch on Touchdown Relay; Yellow to Green-Yellow.
  - c. Check Cam Switch 1C on Score Motor.
  - d. Check operation of Football Reset Relay
8. Football Reset Relay does not energize when checking 7d above:
  - a. Check Eject Hole Switch; Red-Yellow to Red-Black.
  - b. Check Make-Break Switch on Touchdown Relay; Red-Black, Blu, and Blu-Orange.
  - c. Check Index Cam Switch D; Blu-Brown, Yellow and Blu.

# ADVANCE S. U. UNIT

THIS UNIT RESETS AT START OF A NEW GAME OR WHEN A TOUCHDOWN HAS BEEN MADE AND THE BALL GOES IN EJECT HOLE OR OUTHOLE. AFTER THIS UNIT RESETS, IT ADVANCES 3 STEPS AT A TIME UNTIL THE FOOTBALL RESET RELAY DROPS OUT.

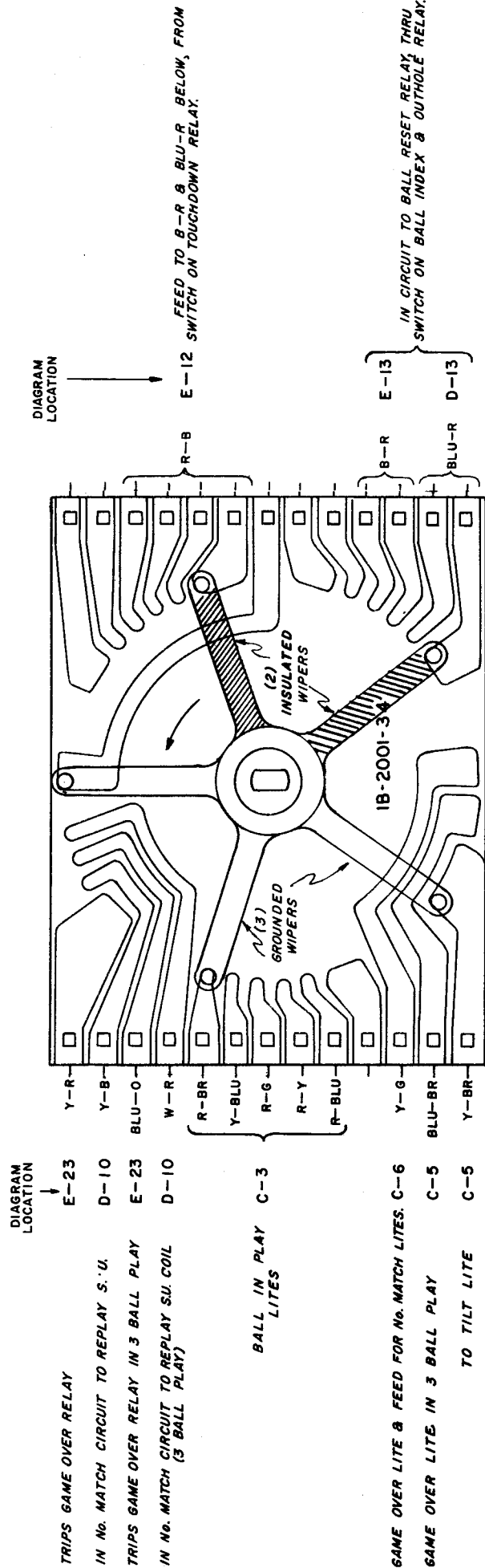
*View looking at WIPER FINGER SIDE with wiper in RESET or ZERO position*



# BALL COUNT S.U. UNIT

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

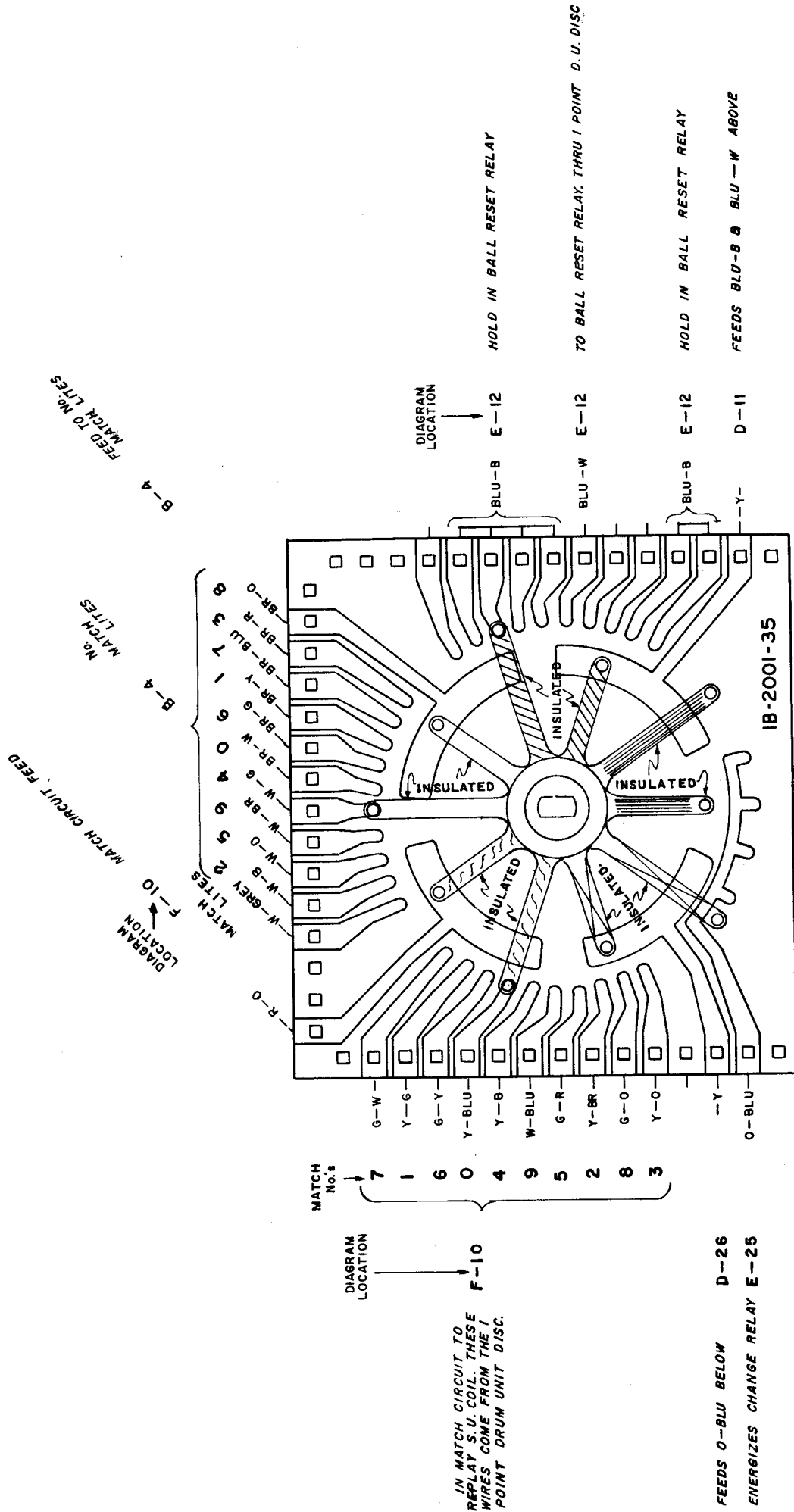
View looking at WIPER FINGER SIDE with wiper in ZERO OR RESET position





## NO. MATCH S. U.

THIS UNIT ADVANCES ONE STEP WHENEVER THE I POINT RELAY IS IMPULSED OR THE END OF STROKE SWITCH ON THE ADVANCE UNIT IS MADE.  
 ONE FUNCTION OF THIS UNIT IS TO VARY THE DISTANCE OF THE KICKOFF RETURNS.



IN MATCH CIRCUIT TO REPLAY S. U. COIL. THESE WIRES COME FROM THE I POINT DRUM UNIT DISC.

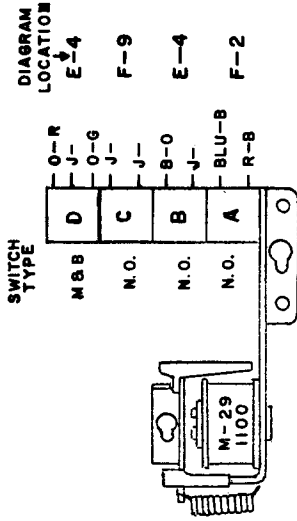
FEEDS O-BLU BELOW D-26  
 ENERGIZES CHANGE RELAY E-25

# A. C. RELAYS & SWITCHES

## On Mechanism Panel

### 10¢ RELAY

IS ENERGIZED BY THE 10¢ COIN SWITCH THRU THE 10¢ ADJUSTMENT JACK



### OPERATION

TO KNOCKER COIL - ALSO RUNS SCORE MOTOR

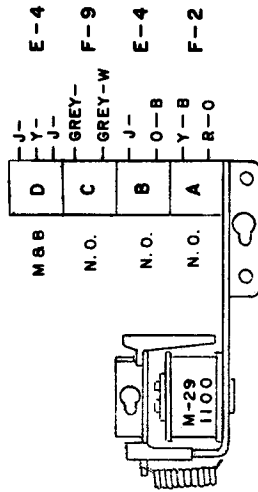
ENERGIZES REPLAY S. U. FROM IMPULSE CAM SW.

ENERGIZES LOCK RE.

HOLD CIRCUIT TO THIS RELAY

### 25¢ RELAY

IS ENERGIZED BY THE 25¢ COIN SWITCH



IN CIRCUIT TO KNOCKER COIL - ALSO RUNS SCORE MOTOR

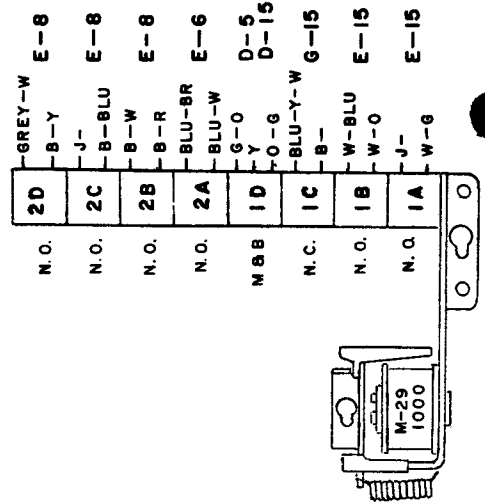
ENERGIZES REPLAY S. U. FROM IMPULSE CAM SW.

ENERGIZES LOCK RE.

HOLD CIRCUIT TO THIS RELAY

### RESET RELAY

IS ENERGIZED BY A SWITCH ON THE COIN RELAY, AND HELD IN BY THE (6) DRUM UNIT ZERO BREAK SWITCHES



IN CIRCUIT TO 100 PT. & 1000 P.T. D. U.

IN CIRCUIT TO 10 PT. D. U.

IN CIRCUIT TO 1 PT. D. U.

HOLD CIRCUIT FOR THIS RELAY

IN CIRCUIT TO 10 P.T. D. U. - ALSO RUNS SCORE MOTOR

BREAKS ALL CIRCUITS INVOLVING ANY PLAYFIELD SW.

IN CIRCUIT TO 10 PT. GOAL D. U.

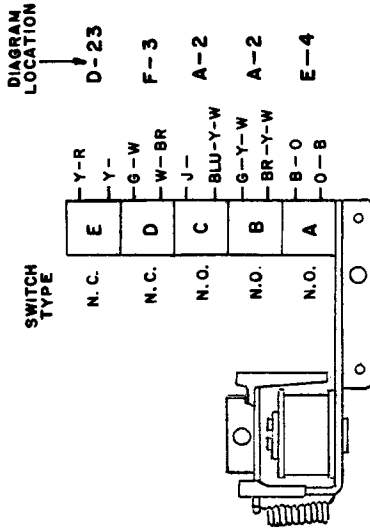
IN CIRCUIT TO 1 PT. GOAL D. U.

# A. C. RELAYS & SWITCHES

## On Mechanism Panel

### OPERATION

TRIPS GAME - OVER RE.  
 TO COIN RE. FROM REPLAY BUTTON  
 } - 6V. FROM TRANSFORMER TO LITES  
 HOLD CIRCUIT TO THIS RELAY

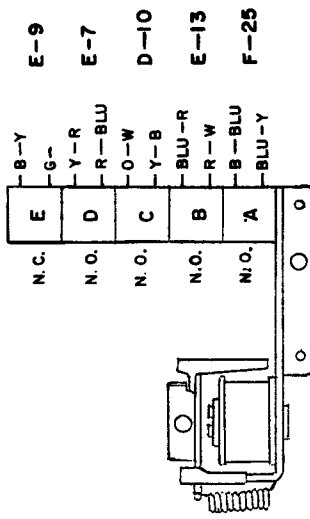


### LOCK RELAY

IS ENERGIZED BY THE LEFT FLIPPER SWITCH, COIN RELAY, 10¢ RELAY OR 25¢ RELAY SWITCH

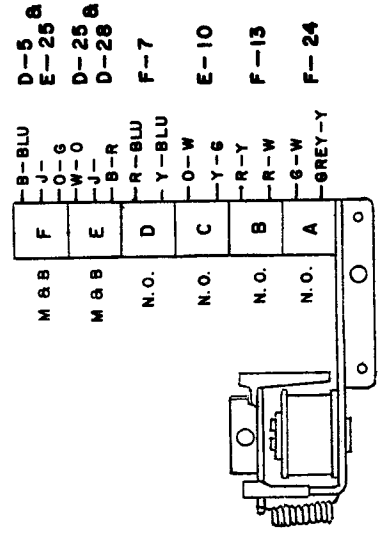
### BALL INDEX RELAY

IS ENERGIZED BY A SWITCH ON THE 1 PT. RELAY, 10 PT. RELAY OR 100 PT RELAY. ALSO BY THE TROUGH SWITCH



### OUTHOLE RELAY

IS ENERGIZED BY THE OUTHOLE SWITCH.



RUNS SCORE MOTOR - ALSO IN SERIES WITH SW. A ON BALL INDEX RE.  
 IN CIRCUITS TO BALL RELEASE COIL & TARGET RE.  
 IN SERIES WITH SW. D ON BALL INDEX RE.  
 IN SERIES WITH SW. C ON BALL INDEX RE.  
 IN SERIES WITH SW. B ON BALL INDEX RE.  
 HOLD CIRCUIT TO THIS RELAY.

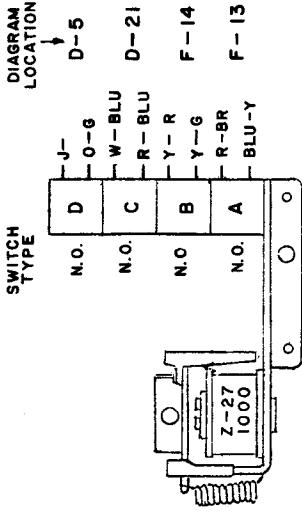
IN CIRCUIT TO 1000 PT. DRUM UNIT DURING RESET CYCLE  
 IN CIRCUIT TO BALL COUNT UNIT S. U.  
 TO REPLAY S. U. COIL IN NO MATCH CIRCUIT  
 IN CIRCUIT TO BALL RESET RE. AFTER TOUCHDOWN  
 HOLD CIRCUIT TO THIS RELAY

# A. C. RELAYS & SWITCHES

## On Mechanism Panel

### EJECT RELAY

IS ENERGIZED BY THE EJECT SWITCH THRU A SWITCH ON THE TOUCHDOWN RELAY.

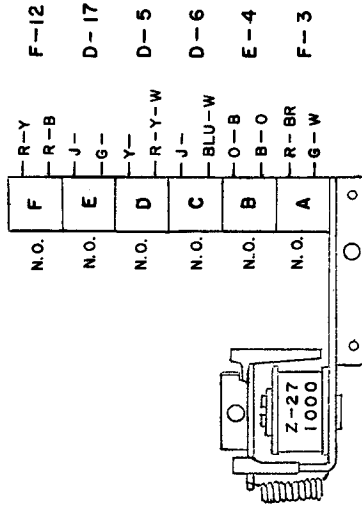


### OPERATION

RUNS SCORE MOTOR  
 PULSES 10 PT. RE. OR 100 PT. RE. FROM IMPULSE CAM SW. D.  
 ENERGIZES EJECT COIL FROM SCORE MTR CAM SW. 4 C  
 HOLD CIRCUIT FOR THIS RELAY

### COIN RELAY

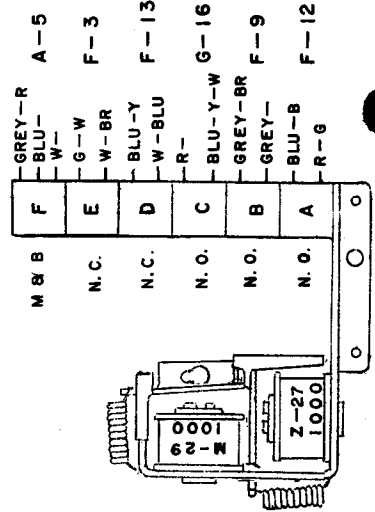
IS ENERGIZED BY THE COIN SWITCH



ENERGIZES BALL RESET RE.  
 ENERGIZES TOUCHDOWN RE.  
 ENERGIZES GAME OVER (LATCH), BALL COUNT RESET, REPLAY UNIT RESET & METER  
 ENERGIZES RESET RE.  
 ENERGIZES LOCK RELAY  
 HOLD CIRCUIT TO THIS RELAY

### GAME OVER RELAY (Interlock)

LATCH COIL IS ENERGIZED BY A SWITCH ON THE COIN RELAY AND SCORE MOTOR CAM SWITCH 1 A. TRIP COIL IS ENERGIZED BY TILT SWITCHES, LOCK RELAY SWITCH, OR BALL COUNT UNIT DISC.



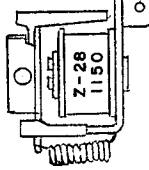
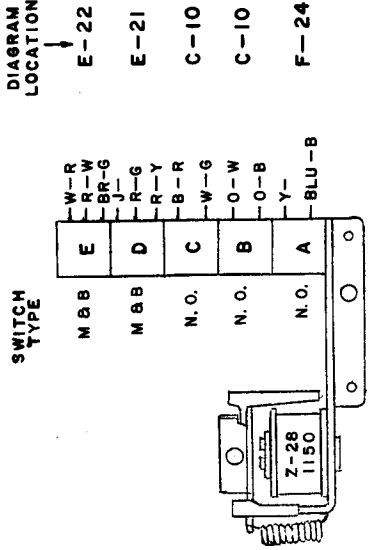
BREAKS 6 V. TO PLAYFIELD LITES.  
 ENERGIZES COIN RE. THRU REPLAY BUTTON SW.  
 ENERGIZES EJECT RE. FROM EJECT SW.  
 BREAKS CIRCUIT TO ALL PLAYFIELD SWS.  
 TO REPLAY S.U. IN NO. MATCH CIRCUIT  
 BREAKS CIRCUIT TO BALL RESET RE.

# A. C. RELAYS & SWITCHES

## On Playfield Panel

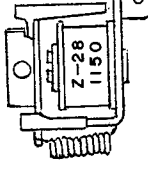
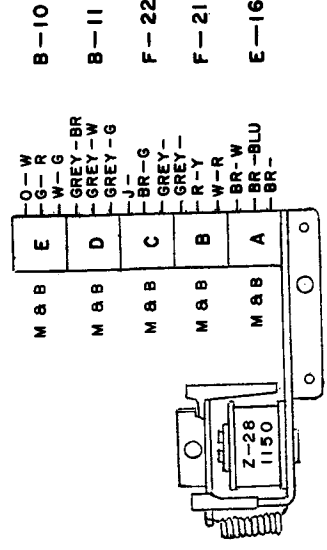
### SPECIAL RELAY

IS ENERGIZED BY THE 10 PT. GOAL DRUM UNIT AND THE 1 PT. GOAL DRUM UNIT THRU THE 3-5 BALL ADJUSTMENT JACK



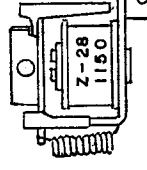
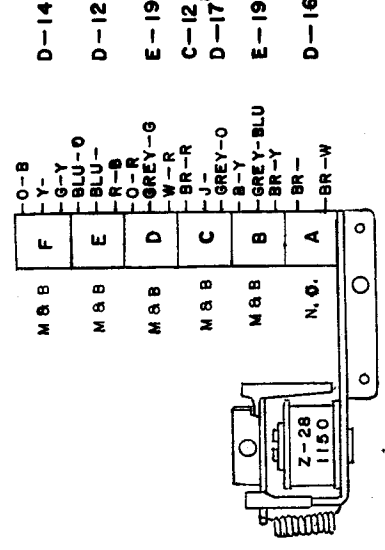
### CHANGE RELAY

IS ENERGIZED EVERY OTHER STEP ON THE NO. MATCH UNIT DISC.



### TOUCHDOWN RELAY

IS ENERGIZED BY THE ADVANCE UNIT DISC (WHEN A TOUCHDOWN IS SCORED) OR BY THE COIN RELAY IF ADJUSTMENT JACK IS IN CONSERVATIVE POSITION.



### OPERATION

IMPULSES 10 PT. RE. OR REPLAY S. U.  
 IMPULSES 10 PT. RE. OR REPLAY S. U. TO RIGHT BOTTOM R. O. (SPECIAL) LITE  
 TO LEFT BOTTOM R. O. (SPECIAL) LITE  
 HOLD CIRCUIT TO THIS RELAY

IN SERIES WITH SWS. B & C ON SPECIAL RE.

TO BOTTOM R. O. LITES (3 PTS.)

ENERGIZES 10 PT. RE. OR REPLAY S. U. FROM R. BOTTOM R. O. SW.

ENERGIZES 10 PT. RELAY OR REPLAY S. U. FROM LEFT BOTTOM ROLLOVER SWITCH.

IN CIRCUIT TO 3 PT. RE. (FIELD GOAL) THRU LEFT BOTTOM OR RIGHT BOTTOM ROLLOVER SWITCH

IN CIRCUIT TO ADVANCE UNIT RESET & S. U. COILS

ENERGIZES EJECT RE. OR BALL RESET RE. FROM INDEX CAM SW. D.

TO ADVANCE RE. OR 10 PT. RE.

TO (2) TOP BUMPER LITES, OR PULLS IN TOUCHDOWN RE.

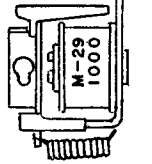
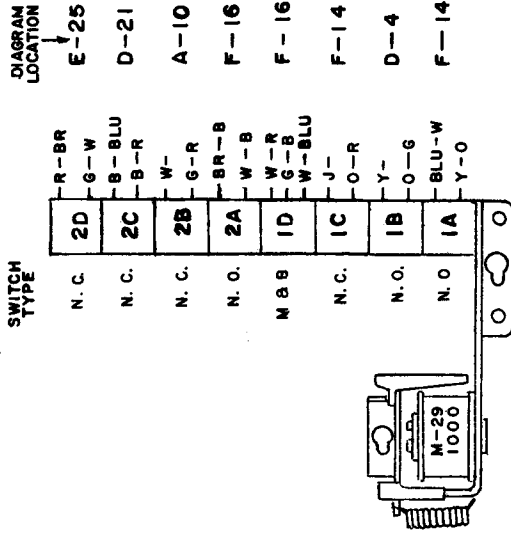
TO ADVANCE RE. OR 100 PT. RE.

IN CIRCUIT TO 3 PT. RE. (FIELD GOAL).

# A. C. RELAYS & SWITCHES On Playfield Panel

## 3 POINT RELAY

IS ENERGIZED BY THE LEFT OR RIGHT BOTTOM ROLLOVER SWITCH THRU THE ADVANCE UNIT DISC (BETWEEN 50 YARD LINE AND TOUCHDOWN). IT ALSO ENERGIZES, AFTER A TOUCHDOWN HAS BEEN MADE, THRU THE ADVANCE UNIT DISC AND SCORE MOTOR INDEX CAM SWITCH B.



## OPERATION

IN SERIES WITH SW. A ON OUTHOLE RE.

IN SERIES WITH SWS D & E ON SPECIAL RE.

TO L. & R. BOTTOM R. O. LITES (1 PT. & SPECIAL)

HOLD CIRCUIT TO THIS RELAY

TO 1 PT. GOAL D.U.

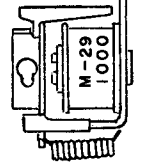
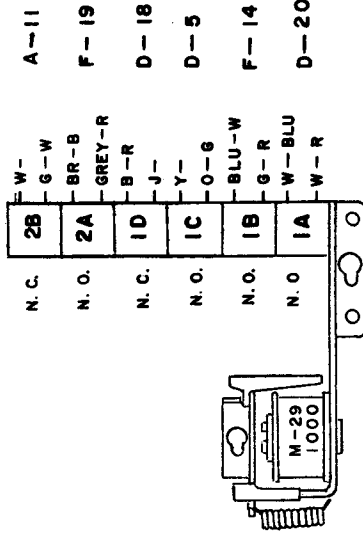
BREAKS CIRCUIT TO ADVANCE UNIT RESET COIL

RUNS SCORE MOTOR

ENERGIZES ADVANCE UNIT S. U. AFTER TOUCHDOWN.

## 30 POINT RELAY

IS ENERGIZED BY THE TOP ROLLOVER BUTTON SWITCH WHEN THE #1 RELAY IS IN, OR BY THE BOTTOM ROLLOVER BUTTON SWITCH WHEN THE #2 RELAY IS IN. ALSO, IN A 3 BALL GAME, BY THE (2) TOP TARGET SWITCHES OR THE (2) BOTTOM ROLLOVER BUTTON SWITCHES



TO L. & R. BOTTOM R. O. LITES (3 PTS.)

HOLD CIRCUIT TO THIS RELAY

BREAKS CIRCUIT TO BOTTOM R. O. SWS.

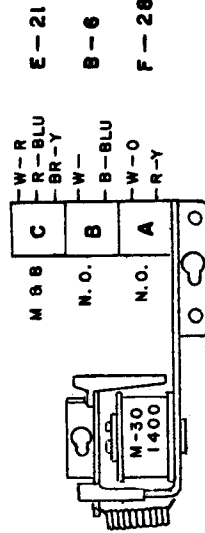
RUNS SCORE MOTOR

PULSES ADVANCE UNIT S.U. FROM IMPULSE CAM SW. A.

ENERGIZES 10 PT. RE. FROM IMPULSE CAM SW. D.

## TARGET RELAY

IS ENERGIZED BY THE (2) TOP TARGET SWITCHES



IN SERIES WITH SW C ON EJECT RE.

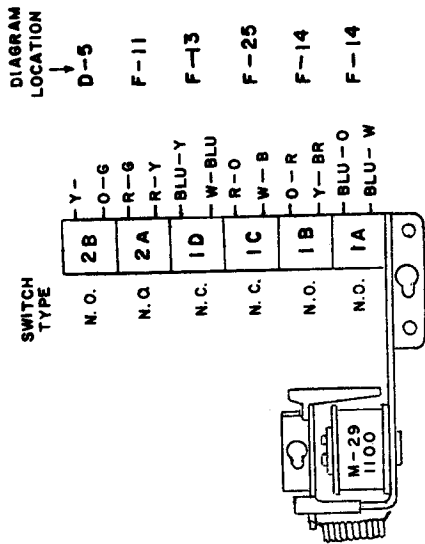
TO EJECT HOLE LITES (500)

HOLD CIRCUIT TO THIS RELAY

# A. C. RELAYS & SWITCHES On Playfield Panel

## FOOTBALL RESET RELAY

IS ENERGIZED AFTER A TOUCHDOWN HAS BEEN SCORED, BY THE EJECT SWITCH, COIN RELAY, OR BALL INDEX AND OUTHOLE RELAYS.

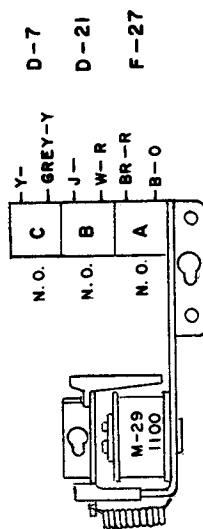


## OPERATION

- RUNS SCORE MOTOR
- HOLD CIRCUIT TO THIS RELAY
- BREAKS CIRCUIT TO EJECT RE.
- BREAKS CIRCUIT TO BALL RELEASE COIL
- IN SERIES WITH SW 1 C ON 3 PT. RE.
- ENERGIZES ADVANCE UNIT S. U. FROM CAM SWS. 2A, 3A & 4A.

## No. 3 BUMPER RELAY

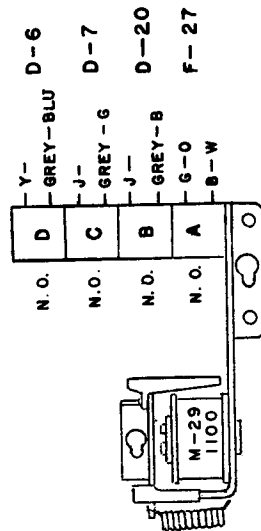
IS ENERGIZED BY THE CENTER JET BUMPER SWITCH.



- ENERGIZES CENTER JET BUMPER
- PULSES 10 PT. RE.
- HOLD CIRCUIT TO THIS RELAY

## No. 2 BUMPER RELAY

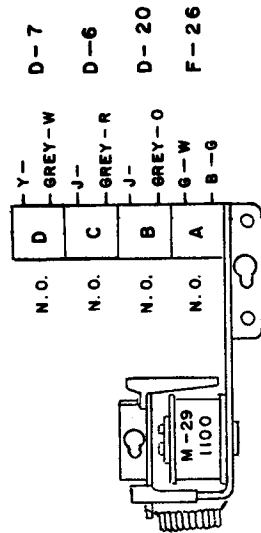
IS ENERGIZED BY THE RIGHT TOP AND LEFT BOTTOM JET BUMPER SWITCHES.



- PULSES R. TOP JET BUMPER
- PULSES L. BOTTOM JET BUMPER
- PULSES 1 PT. RE. OR 10 PT. RE.
- HOLD CIRCUIT TO THIS RELAY

## No. 1 BUMPER RELAY

IS ENERGIZED BY THE LEFT TOP AND RIGHT BOTTOM JET BUMPER SWITCHES.



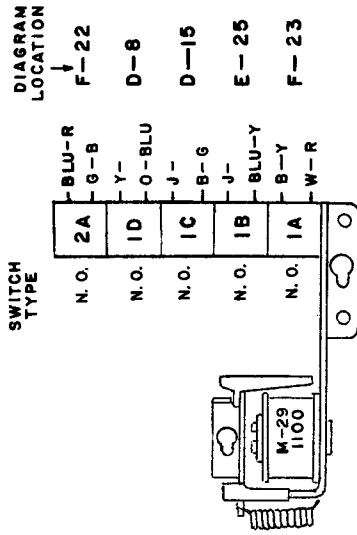
- PULSES R. BOTTOM JET BUMPER
- PULSES L. TOP JET BUMPER
- PULSES 1 PT. RE. OR 10 PT. RE.
- HOLD CIRCUIT TO THIS RELAY

# A. C. RELAYS & SWITCHES

On Insert

## 1 POINT RELAY

IS ENERGIZED BY THE NO. 1 AND NO. 2 BUMPER RELAYS, KICKER SWITCHES AND STANDUP SWITCHES.

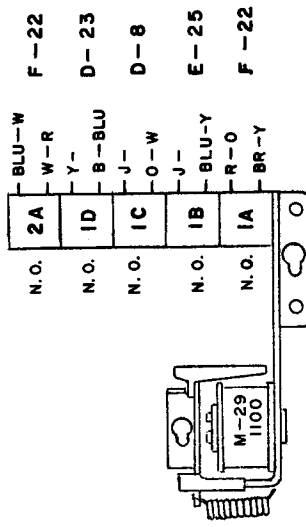


## OPERATION

HOLD CIRCUIT TO THIS RELAY  
 ENERGIZES 1 PT. DRUM UNIT  
 ENERGIZES NO. MATCH S. U.  
 ENERGIZES BALL INDEX RE.  
 PULSES 10 PT. RE. THRU 9TH POS. SW. ON 1 PT. D. U.

## 10 POINT RELAY

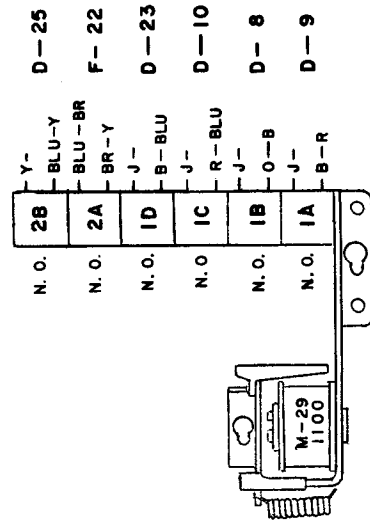
IS ENERGIZED BY (2) TOP BUMPER SWITCHES (AFTER A TOUCHDOWN IS SCORED), 30 PT. RELAY, TOP AND BOTTOM ROLL-OVER BUTTON SWITCHES, NO. 1. AND NO. 2 BUMPER RELAYS, AND ADVANCE RELAY.



HOLD CIRCUIT TO THIS RELAY  
 IMPULSES LARGE BELL COIL  
 ENERGIZES 10 PT. DRUM UNIT  
 ENERGIZES BALL INDEX RE.  
 PULSES 10 PT. RE. THRU 9TH POS. SW. ON 10 PT. D. U.

## 100 POINT RELAY

IS ENERGIZED BY (2) TOP TARGET SWITCHES AND (2) BOTTOM ROLL-OVER BUTTON SWITCHES, AFTER A TOUCHDOWN IS SCORED. ALSO BY #3 BUMPER RELAY, AND EJECT RELAY



ENERGIZES BALL INDEX RE.  
 HOLD CIRCUIT TO THIS RELAY  
 ENERGIZES LARGE BELL COIL  
 ENERGIZES REPLAY S. U. IN HIGH-SCORE CIRCUIT  
 ENERGIZES 100 PT. DRUM UNIT  
 ENERGIZES 1000 PT. DRUM UNIT THRU 9TH POS. SW. ON 100 PT. D. U.

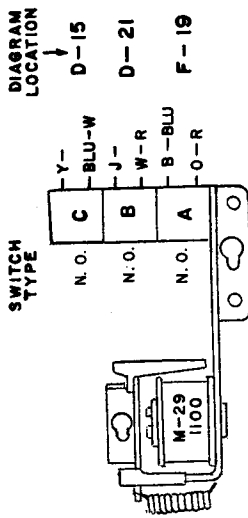


# A. C. RELAYS & SWITCHES

On Insert

## ADVANCE RELAY

IS ENERGIZED BY NO. 1 TO NO. 5 ROLL-OVER BUTTONS WHEN LIT. ALSO, UNTIL A TOUCHDOWN IS SCORED, BY (2) TOP TARGET SWITCHES, (2) BOTTOM ROLL-OVER BUTTON SWITCHES, AND (2) TOP BUMPER SWITCHES.

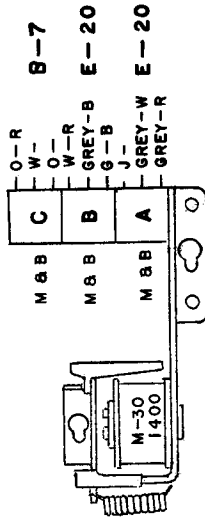


## OPERATION

ENERGIZES ADVANCE UNIT S.U.  
 IMPULSES 10 PT. RE.  
 HOLD CIRCUIT TO THIS RELAY

## No. 1 RELAY

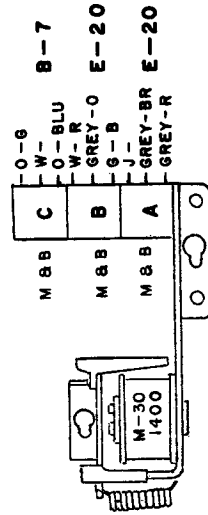
IS ENERGIZED THRU THE ADVANCE UNIT DISC.



TO R. TOP & L. BOTTOM JET BUMPER LITES - ALSO TOP R. O. BUTTON LITE  
 IN SERIES WITH SW. B ON NO. 2 BUMPER RE.  
 TO 10 PT. RE. & 30 PT. RE.

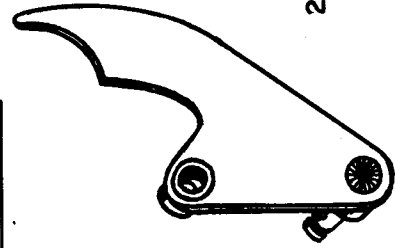
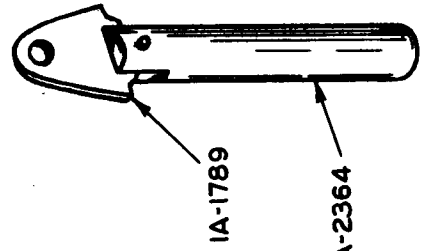
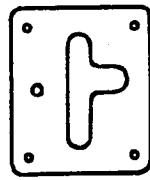
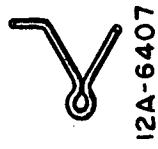
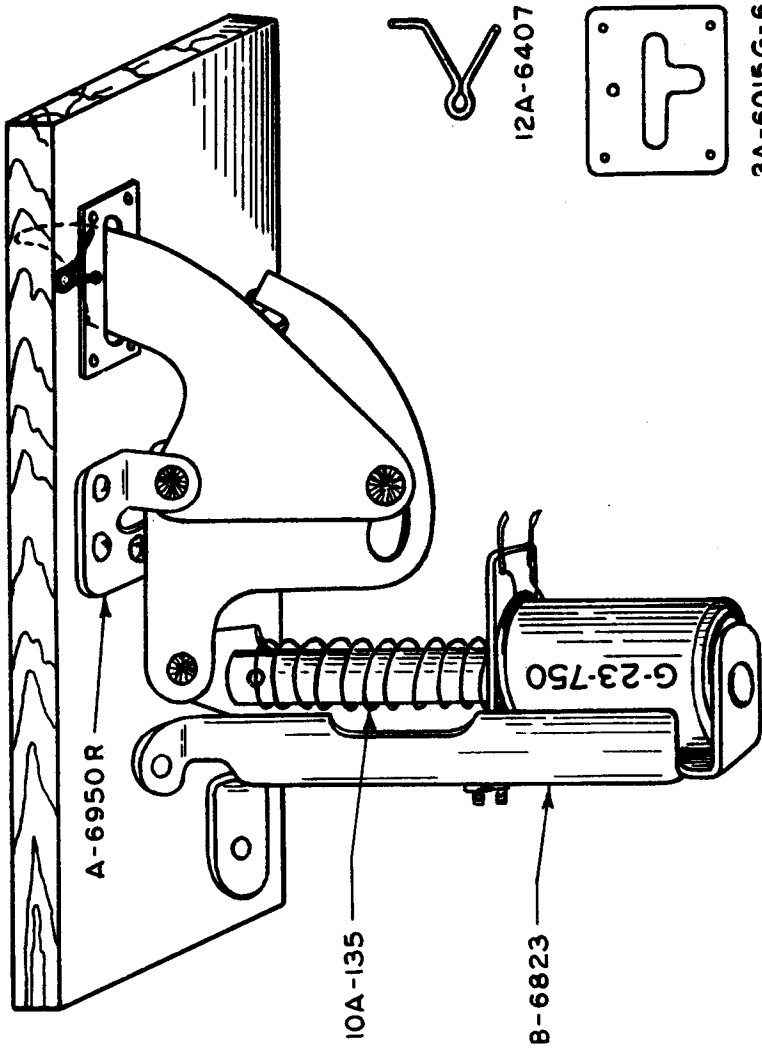
## No. 2 RELAY

IS ENERGIZED THRU THE ADVANCE UNIT DISC.

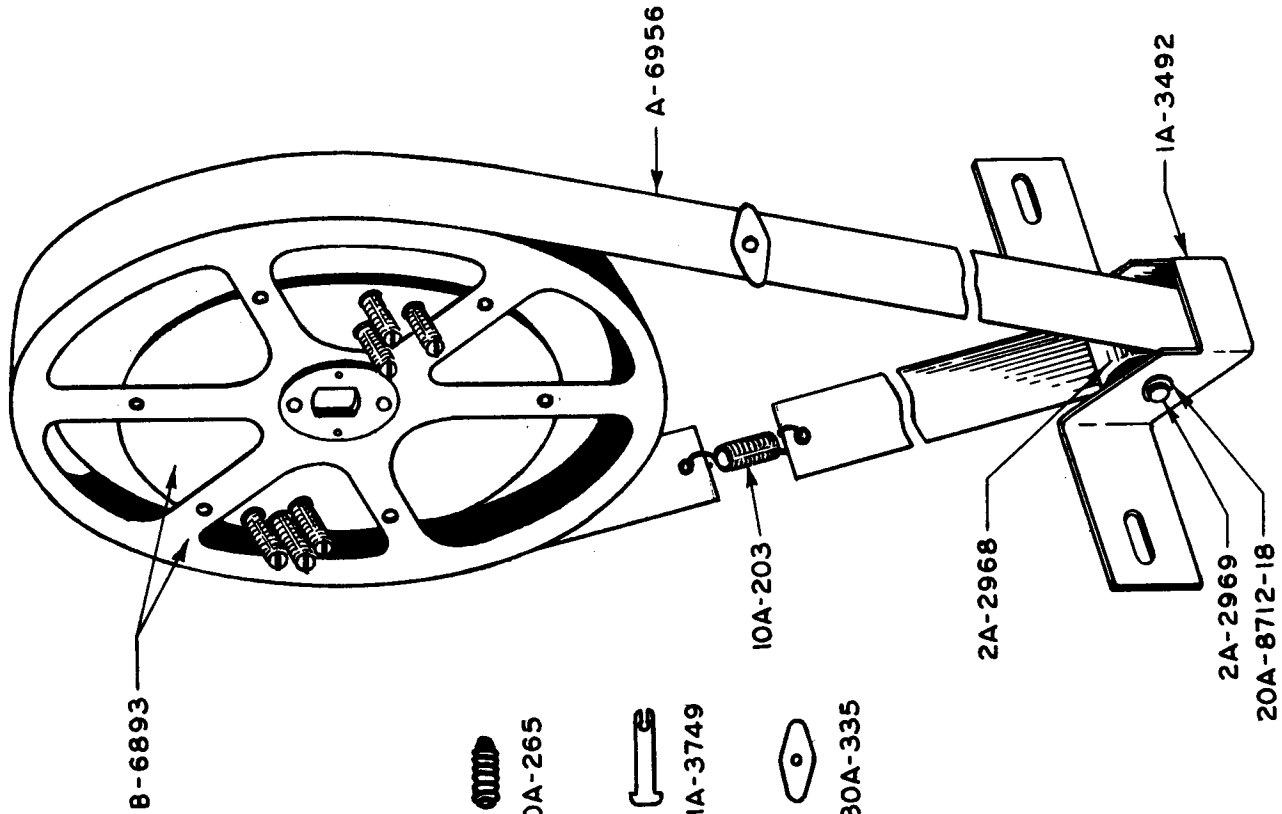
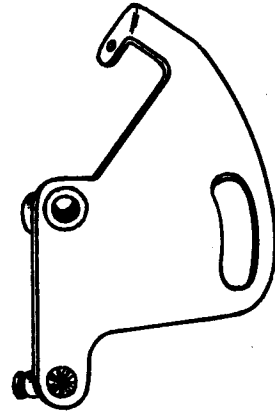


TO L. TOP & R. BOTTOM JET BUMPER LITES - ALSO BOTTOM R.O. BUTTON LITE.  
 IN SERIES WITH SW. B ON NO. 1 BUMPER RELAY  
 TO 10 PT. RE. & 30 PT. RE.

NEW PARTS ON "TOUCHDOWN" & "KICKOFF"



B-6989 BALL EJECT CAM UNIT



C-6957

CONTACT WIPER, FOOTBALL TAPE ASS'Y.

## PRICE LIST

Part No.	Description	Price
1 A 1789	Armature Link (Fibre) .....	.30
1 A 3492	Roller Mounting Bracket .....	.61
1 A 3749	Contact Wiper Blade .....	.06
2 A 2364	Solenoid Plunger .....	.35
2 A 2968	Tape Roller .....	.60
2 A 2969	Roller Pin .....	.24
3 A 6015 G-6	Eject Hole Shield .....	.10
10 A 135	Compression Spring (Eject Plunger) .....	.07
10 A 203	Extension Spring (Football Tape) .....	.06
10 A 265	Wiper Blade Spring .....	.07
10 A 302	Extension Spring (Eject Cam) .....	.15
11 R 195	Screened Playfield - less hardware .....	48.00
12 A 6407	Eject Hole Wire Form .....	.15
20 A 8712-18	'E' Retaining Ring .....	.04
30 A 335	Yardage Football - includes rivet .....	.45
30 C 335	Playfield Plastics (Set of 9) .....	15.00
30 C 335-1	Playfield Plastic .....	2.10
30 C 335-2	Playfield Plastic .....	2.10
30 C 335-3	Playfield Plastic .....	1.30
30 C 335-4	Playfield Plastic .....	1.30
30 C 335-5	Playfield Plastic .....	1.10
30 C 335-6	Playfield Plastic .....	1.10
30 C 335-7	Playfield Plastic .....	1.70
30 C 335-8	Playfield Plastic .....	1.70
30 C 335-9	Playfield Plastic .....	1.80
A 5103	Plunger & Link Assy. ....	.96
B 6823	Coil Mounting Bracket Assy. ....	.90
B 6893	Wiper Carrier Assy. ....	1.60
A 6948 R	Ball Eject Cam Assy. ....	.60
A 6949 R	Ball Eject Spring Plate Assy. ....	.45
A 6950 R	Eject Mounting Bracket Assy. ....	.65
A 6956	Football Yardage Tape Assy. ....	2.00
C 6957	Wiper Carrier, Tape & Roller Assy. ....	6.80
B 6989	Eject Cam, Coil & Mounting Assy. ....	5.50
G 23-750	24 Volt Coil .....	1.80