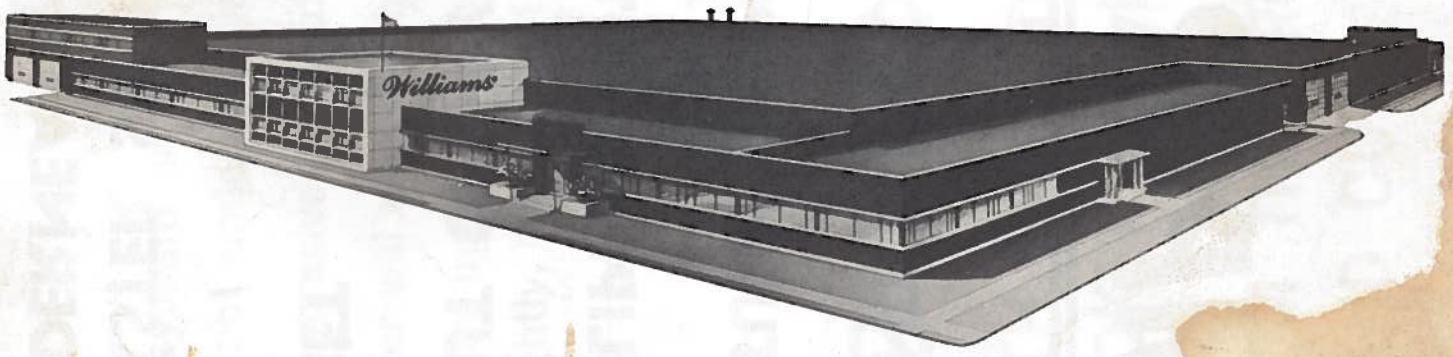
Instruction Manual

for

STRIKE ZONE



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

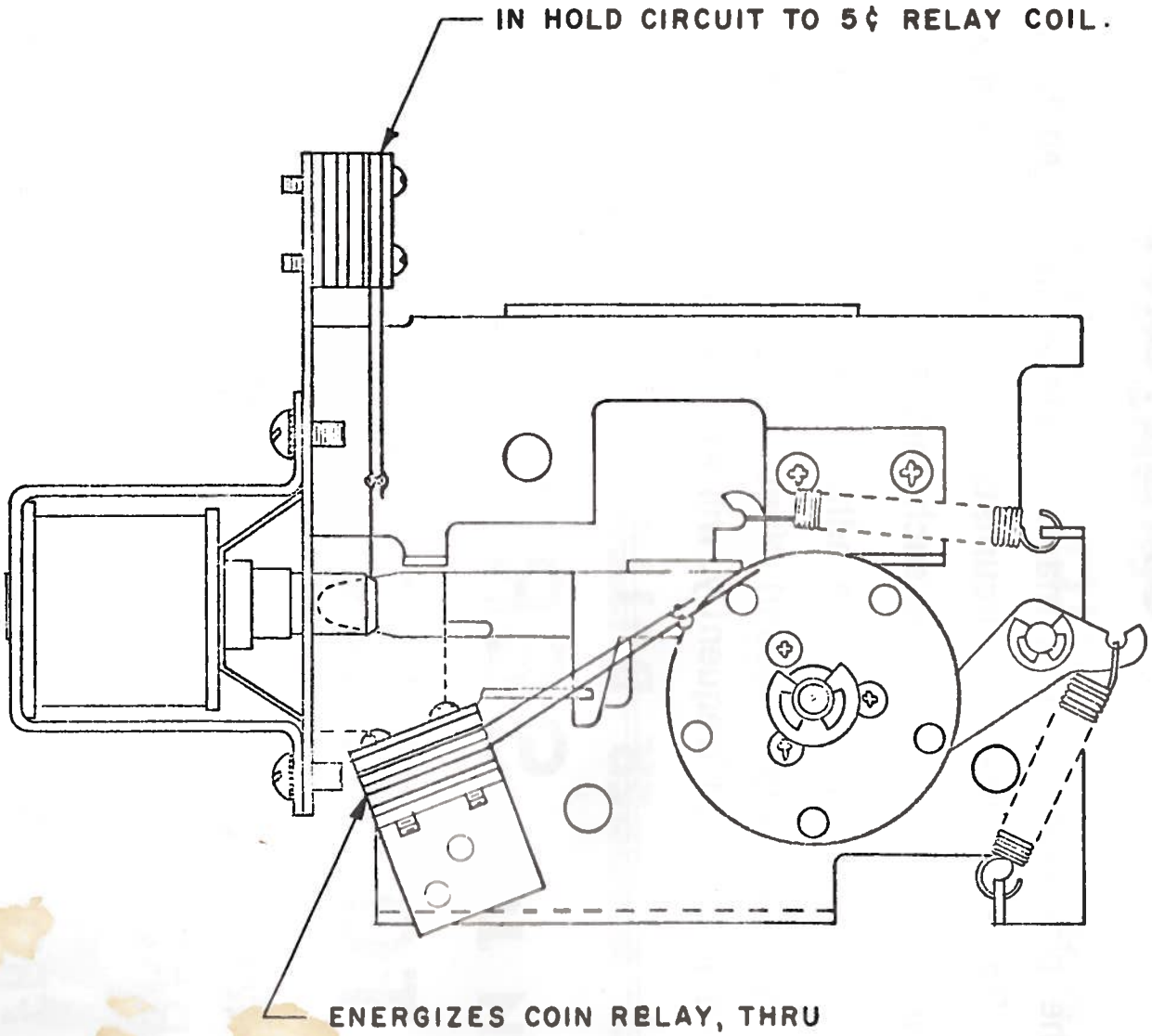
TO REMOVE BACKGLASS:

- 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

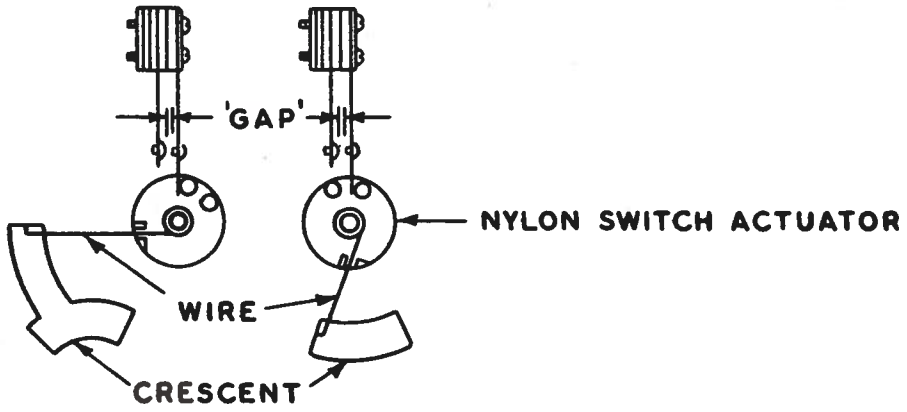
LOCATED ON MECHANISM PANEL.

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.

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.

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	SCORE MOTOR
BALL COUNT	C-6878	C-6520	A-6402-10	
NO. MATCH	C-6417	C-6520	A-6401	14A-7805 (60 CYCLE)
ALTERNATOR	-----	-----	3C-7272	
0-9	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	

"STRIKE ZONE" COIL CHART

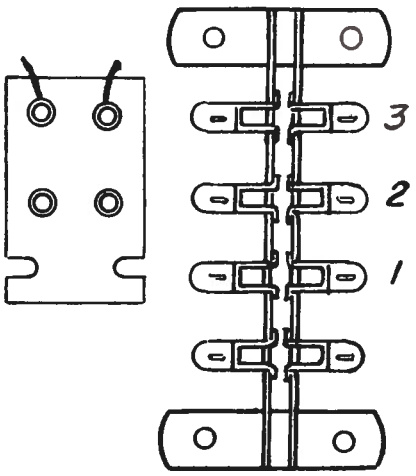
NOTICE:

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
	SOLENOID COILS	
A 22-550	BALL RELEASE	PLAYFIELD
	BALL COUNT UNIT STEP UP	INSERT
	MATCH UNIT STEP UP	INSERT
A 23-600	REPLAY UNIT STEP UP	INSERT
A2-23-750	KNOCKER	CABINET
	LARGE BELL	CABINET
B 26-800	REPLAY UNIT RESET	INSERT
	BALL COUNT UNIT RESET	INSERT
	SCORE DRUM UNITS ... (8 req'd.)	INSERT
	ALTERNATOR UNIT	MECH. PANEL
D 24-1150	RELAY BANK RESET COIL	PLAYFIELD
FL 21-375/ 28-400	FLIPPERS ... (2 req'd.)	PLAYFIELD
G 22-550	JET BUMPERS ... (4 req'd.)	PLAYFIELD
G 23-750	AUTOMATIC KICKERS ... (4 req'd.)	PLAYFIELD
	POST COIL	PLAYFIELD
	RELAY COILS	
M 29-1000	STRIKE RELAY	PLAYFIELD
	POST COIL	PLAYFIELD
	2nd COIN (TRIP)	MECH. PANEL
	SCORE RESET	INSERT
M 29-1100	#1 BUMPER	PLAYFIELD
	#2 BUMPER	PLAYFIELD
	#3 BUMPER	PLAYFIELD
	#4 BUMPER	PLAYFIELD
	POST RELAY	PLAYFIELD
	1 POINT	INSERT
	10 POINT	INSERT
	100 POINT	INSERT
	5¢ RELAY	MECH. PANEL
	10 ¢ RELAY	MECH. PANEL
	25¢ RELAY	MECH. PANEL
M1-31-1500	COIN LOCKOUT COIL	DOOR
XM 27-675	METER COIL	MECH. PANEL
Z 27-1000	OUTHOLE RELAY	MECH. PANEL
	RESET RELAY	MECH. PANEL
	2nd COIN RELAY (LATCH)	MECH. PANEL
	COIN RELAY	MECH. PANEL
	REPLAY RELAY	MECH. PANEL
	300 RELAY	MECH. PANEL
Z 28-1150	LOCK RELAY	MECH. PANEL
	EXTRA BALL RELAY	MECH. PANEL
	A RELAY	PLAYFIELD
	B RELAY	PLAYFIELD
	C RELAY	PLAYFIELD
	D RELAY	PLAYFIELD
	1st STRIKE RELAY	PLAYFIELD
	2nd STRIKE RELAY	PLAYFIELD
	3rd STRIKE RELAY	PLAYFIELD
Z 28-1200	BALL INDEX	MECH. PANEL
	GATE RELAY	PLAYFIELD
S 27-500	RELAY BANK COILS ... (12 req'd.)	PLAYFIELD

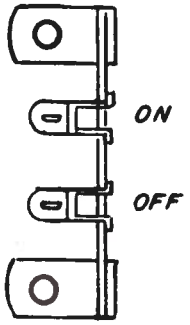
ADJUSTMENTS ON MECHANISM PANEL

10¢ Adjustment

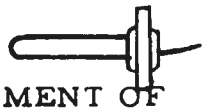


PROVIDES 1, 2 OR 3 PLAYS FOR ONE COIN.

Motor Service Jack

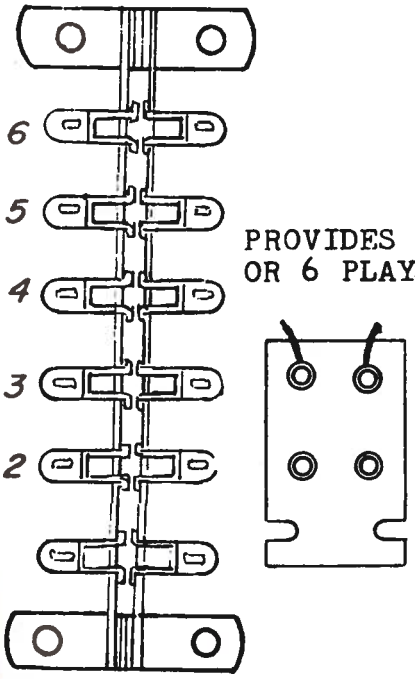


INSERT PHONE TIP IN 'OFF' POSITION - CAMS CAN BE TURNED BY HAND TO CHECK



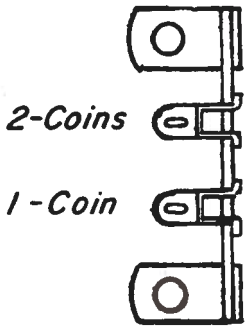
ADJUSTMENT OF SWITCHES.

25¢ Adjustment

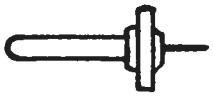


PROVIDES 2, 3, 4, 5 OR 6 PLAYS FOR 25¢.

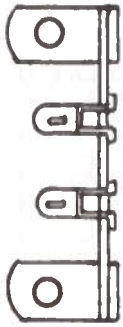
5¢ Adjustment

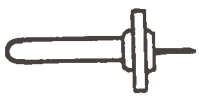


IN "2 COINS FOR 1 PLAY", CIRCUIT TO COIN RELAY PASSES THRU SWITCH ON ALTERNATOR UNIT.



Extra Ball Jack Adj.





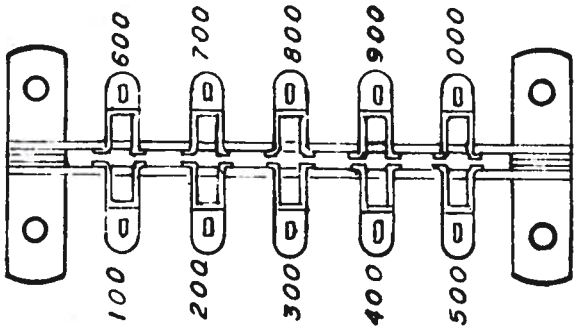
IN REPLAY POSITION, HI-SCORES AWARD REPLAYS.
IN EXTRA BALL POSITION, HI-SCORES WILL AWARD EXTRA BALL.

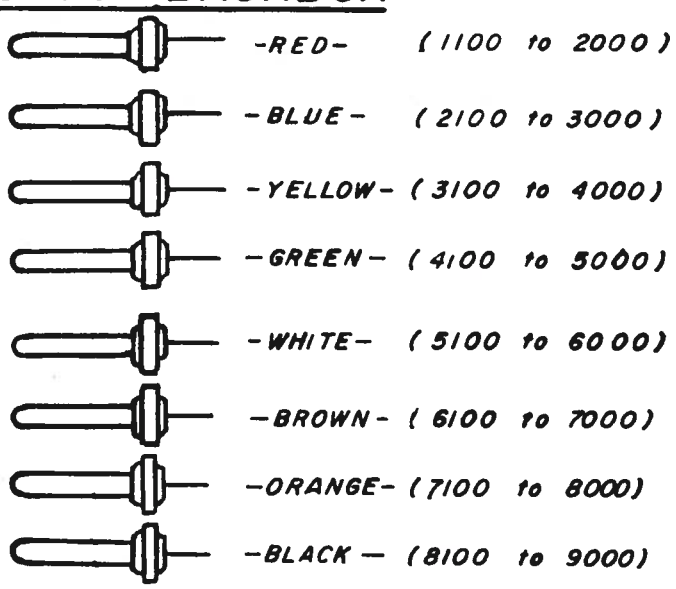
SUGGESTED SCORE CARDS:

5 BALL PLAY 371-1

3 BALL PLAY 371-2

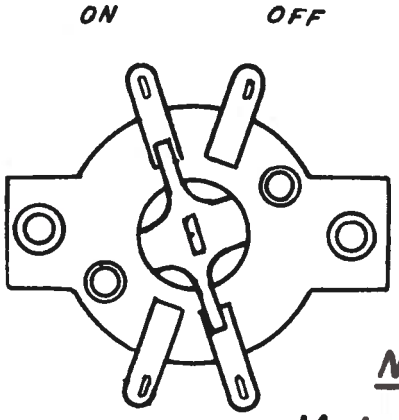
ADJUSTMENTS IN BACKBOX





HI-Score Adjustment

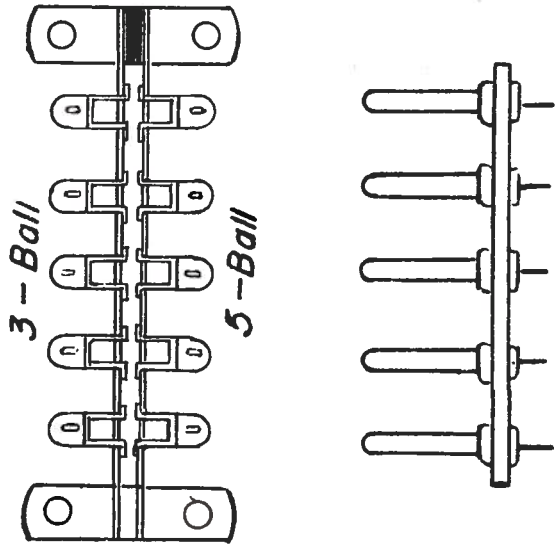
Insert plugs into 10 Point Female at desired positions.
Examples:
Yellow wire into 300 position scores at 3300.
Yellow wire into 000 position scores at 4000.



Number Match Adjustment

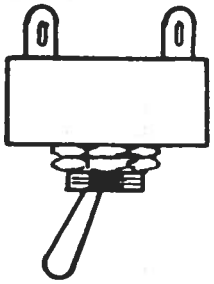
In "ON" position, number match lite will appear when game is over. This number will match the last number in point score, on the average, once every ten games.
In "OFF" position, Number Match is inoperative.

No. of Balls Adjustment



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

Located under front of Cabinet

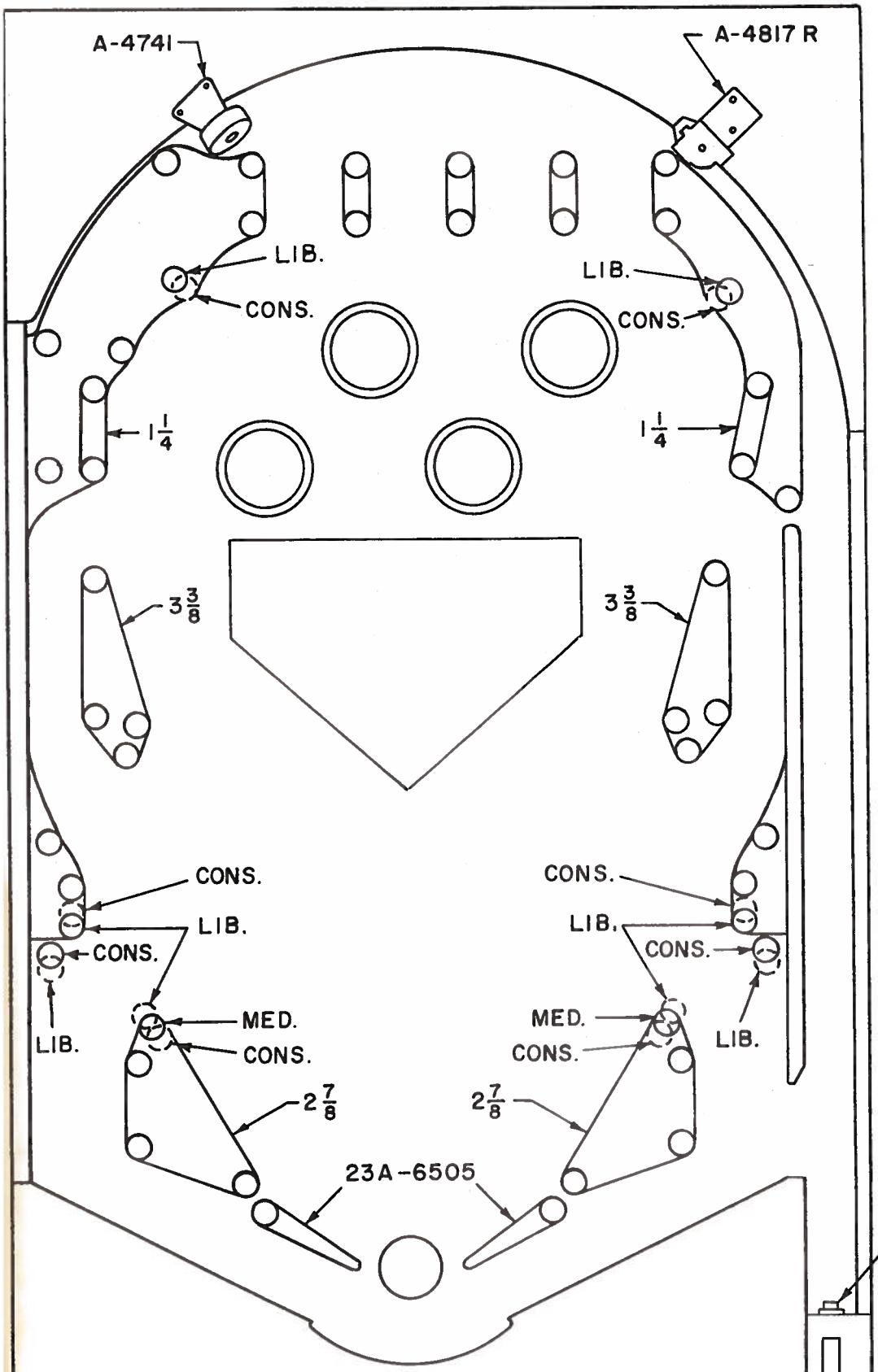


Master On-Off Switch

CONTROLS POWER TO TRANSFORMER

"STRIKE ZONE"— 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-6303	1 1/4" I.D.
23A-6307	2 7/8" I.D.
23A-6308	3 3/8" I.D.
23A-6505	FLIPPER R.R.

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

23A-6327 BALL SHOOTER RUBBER TIP

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

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.

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.

BALL COUNT UNIT

THIS UNIT RESETS AT THE START OF A NEW GAME.
IT ADVANCES ONE STEP AT A TIME WHEN TWO PERSONS ARE PLAYING & TWO STEPS IF ONLY ONE IS PLAYING.

DIAGRAM LOCATION

TRIPS GAME OVER RE. IN 5 BALL PLAY
TRIPS GAME OVER RE. IN 3 BALL PLAY
ENERGIZES & HOLDS PLAYER RE. THRU SW. ON 2nd COIN RE. — C-11

ENERGIZE 10 PT. RE. — THRU 9th POS. SW. ON 1st PLAYER 1 PT. D. U.; THRU 9th POS. SW. ON 2nd PLAYER 1 PT. D. U. — D-17

IN No. MATCH CIRCUIT TO REPLAY S. U. (In 3 ball play) — E-7

FEED TO O-R & O-B — E-7

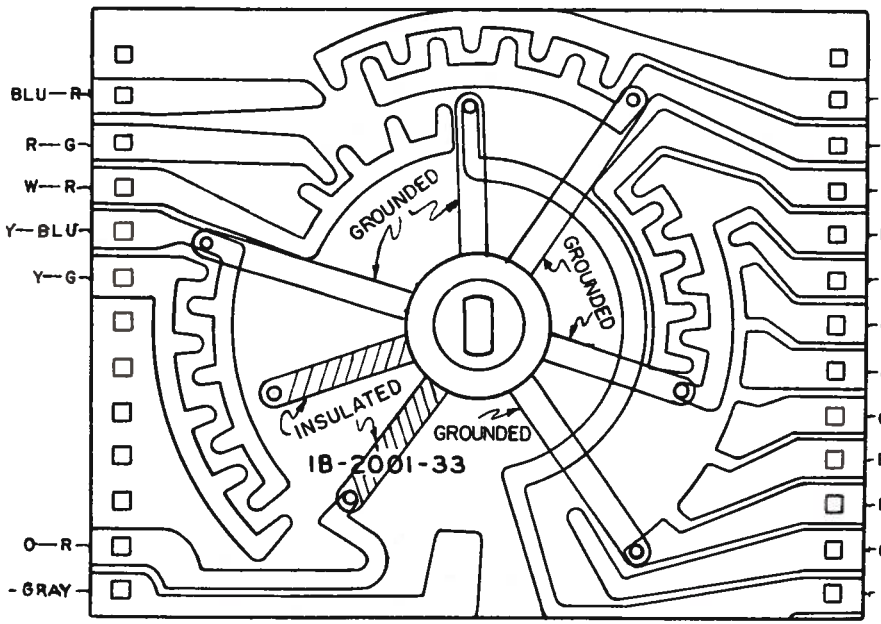


DIAGRAM LOCATION

C-17 — ENERGIZES 100 PT. RE. THRU 9th POS. SW. ON 2nd PL. 10 PT. D. U.
C-17 — ENERGIZES 100 PT. RE. THRU 9th POS. SW. ON 1st PL. 10 PT. D. U.

B-6 — 2nd PLAYER UP LITE.

B-5 — 1st PLAYER UP LITE.

B-5 — 5th BALL IN PLAY LITE
B-5 — 4th BALL IN PLAY LITE
B-5 — 3rd BALL IN PLAY LITE
B-5 — 2nd BALL IN PLAY LITE
B-5 — 1st BALL IN PLAY LITE.

E-7 — IN No. MATCH CIRCUIT TO REPLAY S. U. (In 5 ball play)

View looking at WIPER FINGERS with WIPER in RESET Position

No. MATCH UNIT

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

View looking at WIPER FINGER side

IN No. MATCH CIRCUIT. THESE WIRES COME FROM THE 1-PT. D.U. DISC OF BOTH PLAYERS.

MATCH NO. → -3 -8 -2 -5 -9 -4 -0 -6 -1 -7

DIAGRAM LOCATION → D-7

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

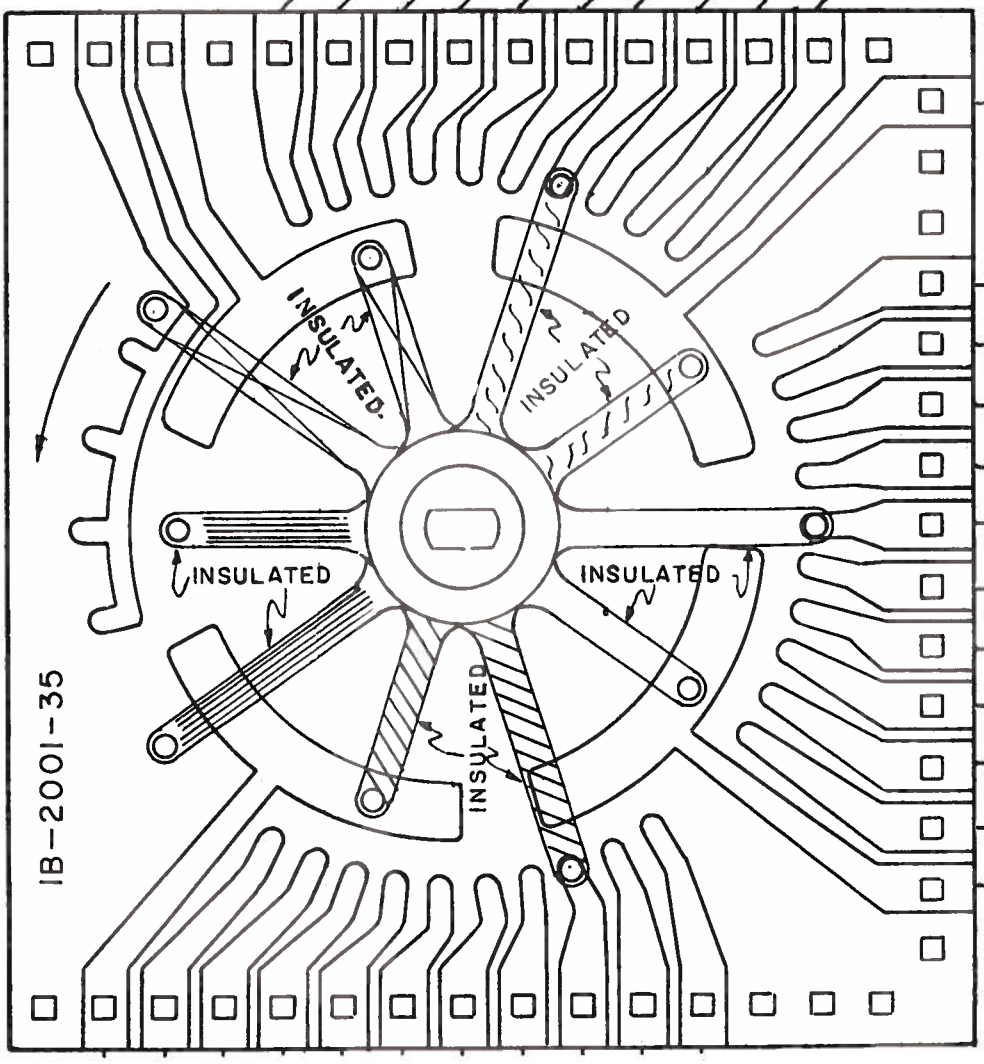


DIAGRAM LOCATION

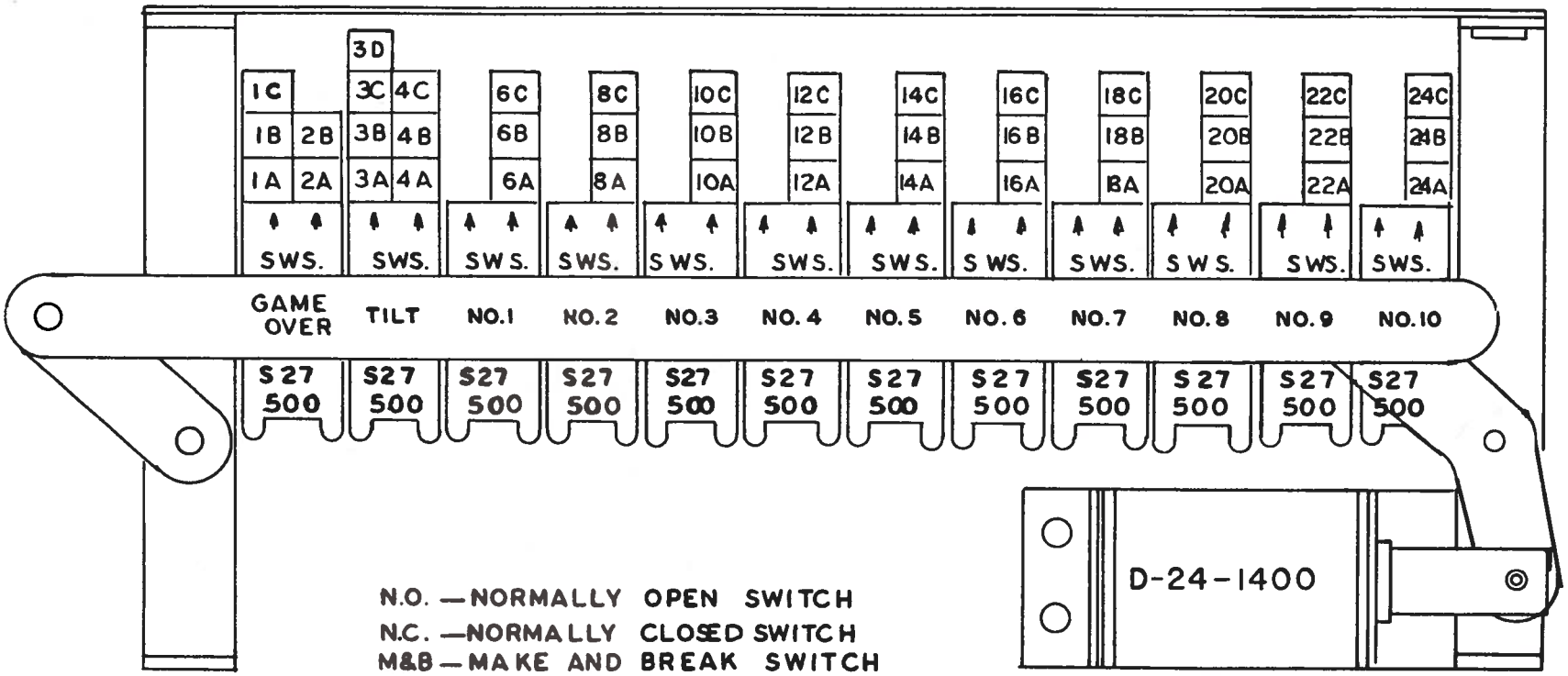
GREY-R D-7 — *NO. MATCH FEED TO REPLAY S.U.*

W-GREY -2
W-B -5
W-O -9
W-BR -4
W-G -0
BR-W -6
BR-G -1
BR-Y -7
BR-BLU -3
BR-R -8

B-7 — *NO. MATCH LITES*

Y- B-7 — *FEED TO No. MATCH LITES*

RELAY BANK SWS.



RELAY	SW.	WIRE COLORS	DIAG. LOC.	TYPE	SWITCH OPERATION
	1C	BR-Y-W -BR- GRAY-O	A-4	M&B	OPENS CIRCUIT TO "BALL IN PLAY" LITES AND CLOSES TO "GAME OVER" & "NO. MATCH" LITES.
GAME-OVER	1B	BLU-W G-R	D-5	N.O.	ENERGIZES RESET RELAY, THRU SWITCH ON COIN RELAY.
RELAY	1A	W-BR G-O	E-4	N.O.	IN CIRCUIT TO REPLAY RELAY.
	2B	BLU-Y-W -B-	F-10	N.C.	OPENS CIRCUIT TO ALL PLAYFIELD SWITCHES.
	2A	R-Y R-BLU	E-10	N.O.	ENERGIZES POST RELAY.

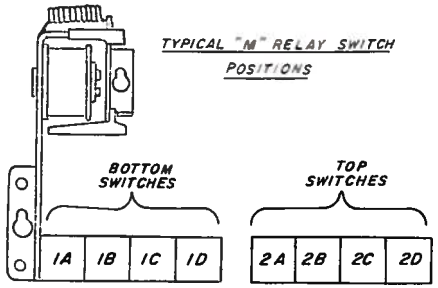
RELAY	SW.	WIRE COLORS	DIAG. LOC.	TYPE	SWITCH OPERATION
TILT RELAY	3D	W-B -GRAY-	F-7	N.C.	TO REPLAY S.U. COIL, IN HI-SCORE CIRCUIT.
	3C	BR-G -Y-	E-11	N.O.	ENERGIZES BALL INDEX RELAY.
	3B	G-W -BLU-	A-9	N.O.	TO "TILT" LITE.
	3A	R-Y R-BLU	E-10	N.O.	ENERGIZES POST RELAY.
	4C	-R- R-Y-W	F-12	N.C.	OPENS CIRCUIT TO ALL PLAYFIELD SWITCHES.
	4B	Y-R -J-	E-11	N.C.	TO TILT RELAY COIL, THRU TILT SWITCHES.
	4A	GRAY-B GRAY-O	A-6	N.C.	OPENS CIRCUIT TO NUMBER MATCH LITES.
NO.1 RELAY	6C	-BLU- -Y- O-W	B-3	M&B	TO"NO.1 PIN" LITE ON PLAYFIELD AND BACK-BOX.
	6B	-J- Y-BLU G-B	E-13	M&B	CLOSES TO 1 POINT RELAY.
	6A	-Y- -J-	C-12	N.O.	IN SERIES WITH SWITCH 8A ON NO.2 RELAY.
NO.2 RELAY	8C	Y-G -Y- O-B	B-3	M&B	TO "NO.2 PIN" LITE ON PLAYFIELD AND BACK-BOX.
	8B	-J- Y-BR G-B	E-13	M&B	CLOSES TO 1 POINT RELAY.
	8A	-J- -J-	C-12	N.O.	IN SERIES WITH SWITCH 10A ON NO.3 RELAY.
NO.3 RELAY	10C	Y-R -Y- B-R	B-3	M&B	TO "NO.3 PIN" LITE ON PLAYFIELD AND BACK-BOX.
	10B	-J- -O- G-B	E-14	M&B	CLOSES TO 1 POINT RELAY.
	10A	-J- -J-	C-12	N.O.	IN SERIES WITH SWITCH 12A on NO.4 RELAY.

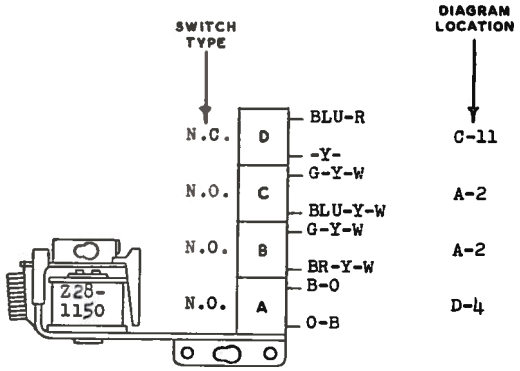
RELAY	SW.	WIRE COLORS	DIAG. LOC.	TYPE	SWITCH OPERATION
NO.4 RELAY	12C	Y-O -Y- B-BLU	B-3	M&B	TO "NO.4 PIN" LITE ON PLAYFIELD AND BACK-BOX.
	12B	-J- Y-B G-B	E-14	M&B	CLOSES TO 1 POINT RELAY.
	12A	-J- -J-	D-12	N.O.	IN SERIES WITH SWITCH 14A ON NO.5 RELAY.
NO.5 RELAY	14C	-BR- -Y- B-Y	B-3	M&B	TO "NO.5 PIN" LITE ON PLAYFIELD AND BACK-BOX.
	14B	-J- -W- G-B	E-14	M&B	CLOSES TO 1 POINT RELAY.
	14A	-J- -J-	D-12	N.O.	IN SERIES WITH SWITCH 16A ON NO.6 RELAY.
NO.6 RELAY	16C	G-R -Y- B-G	B-4	M&B	TO "NO.6 PIN" LITE ON PLAYFIELD AND BACK-BOX.
	16B	-J- G-Y G-B	E-14	M&B	CLOSES TO 1 POINT RELAY.
	16A	-J- -J-	D-12	N.O.	IN SERIES WITH SWITCH 18A ON NO.7 RELAY.
NO.7 RELAY	18C	O-R -Y- B-W	B-4	M&B	TO "NO.7 PIN" LITE ON PLAYFIELD AND BACK-BOX.
	18B	-J- G-W G-B	E-14	M&B	CLOSES TO 1 POINT RELAY.
	18A	-J- -J-	D-12	N.O.	IN SERIES WITH SWITCH 20A ON NO.8 RELAY.
NO.8 RELAY	20C	R-BLU -Y- B-O	B-4	M&B	TO"NO.8 PIN" LITE ON PLAYFIELD AND BACK-BOX.
	20B	-J- G-O G-B	E-14	M&B	CLOSES TO 1 POINT RELAY.

RELAY	SW.	WIRE COLORS	DIAG. LOC.	TYPE	SWITCH OPERATION
	20A	-J- -J-	E-12	N.O.	IN SERIES WITH SWITCH 22A on NO.9 RELAY.
NO.9 RELAY	22C	R-Y -Y- GRAY-R	B-4	M&B	TO "NO.9 PIN" LITE ON PLAYFIELD AND BACK-BOX.
	22B	-J- W-BLU G-B	E-15	M&B	CLOSES TO 1 POINT RELAY.
	22A	-J- -J-	E-12	N.O.	IN SERIES WITH SWITCH 24A ON NO.10 RELAY.
NO.10 RELAY	24C	R-G -Y- GRAY-BLU	B-4	M&B	TO "NO. 10 PIN" LITE ON PLAYFIELD AND IN BACK-BOX.
	24B	-J- W-G G-B	E-15	M&B	CLOSES TO 1 POINT RELAY.
	24A	BLU-O -J-	E-12	N.O.	ENERGIZES STRIKE RELAY WHEN NO.1 THRU NO.10 RELAYS ARE TRIPPED.

A. C. RELAYS & SWITCHES

On Mechanism Panel

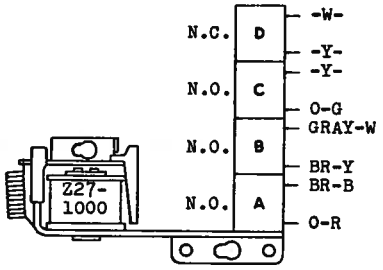




LOCK RELAY

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

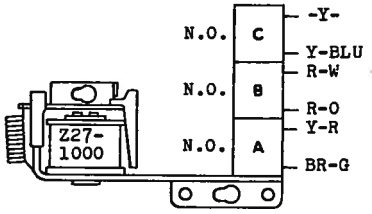
C-11	TRIPS GAME-OVER RELAY.
A-2	6 VOLTS FROM TRANSFORMER TO LITES.
A-2	6 VOLTS FROM TRANSFORMER TO LITES.
D-4	HOLD CIRCUIT TO THIS RELAY, THRU KICK-OFF SWITCH.



300 RELAY

IS ENERGIZED BY LEFT OR RIGHT BOTTOM ROLLOVER (WHEN LIT), OR BY STRIKE RELAY.

C-17	IN CIRCUIT TO 100 POINT RELAY, THRU CENTER TOP ROLLOVER SWITCH.
C-4	RUNS SCORE MOTOR.
C-17	PULSES 100 POINT RELAY.
C-16	IN HOLD CIRCUIT TO THIS RELAY.



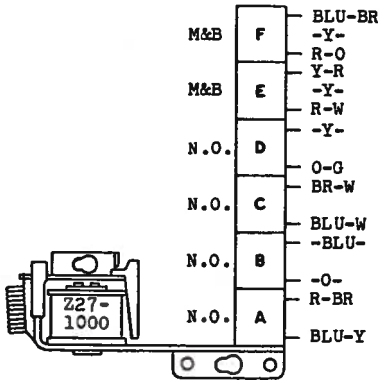
BALL INDEX RELAY

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

C-12	IN SERIES WITH SWITCH A ON EXTRA BALL RELAY.
C-8	IN SERIES WITH SWITCH C ON EXTRA BALL RELAY.
E-11	IN HOLD CIRCUIT TO THIS RELAY.

OUTHOLE RELAY

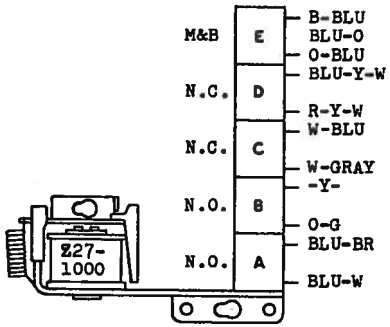
IS ENERGIZED BY OUTHOLE SWITCH.



C-10 C-12	OPENS IN HOLD CIRCUIT TO 1ST, 2ND & 3RD STRIKE RELAYS AND CLOSES TO ENERGIZE DOWN POST RELAY. OPENS IN HOLD CIRCUIT TO BALL INDEX RELAY AND CLOSES IN SERIES WITH SWITCH B ON BALL INDEX RELAY.
C-8 C-11	
C-5	RUNS SCORE MOTOR.
E-11	ENERGIZES BALL RELEASE COIL AT CAM SWITCH 4A.
C-2	ENERGIZES 110V. RELAY BANK RESET COIL AT CAM SWITCH 1D.
C-11	IN HOLD CIRCUIT TO THIS RELAY.

RESET RELAY

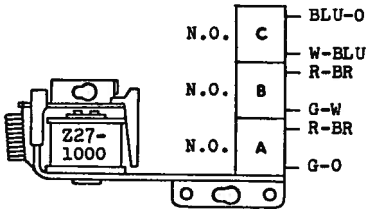
IS ENERGIZED BY SWITCH D ON COIN RELAY.



D-6	OPENS CIRCUIT TO 2ND COIN RELAY (TRIP COIL), AND CLOSES TO LATCH COIL.
F-11	OPENS CIRCUIT TO PLAYFIELD SWITCHES.
C-4	OPENS CIRCUIT TO REPLAY RELAY DURING RESET CYCLE.
C-5	RUNS SCORE MOTOR.
D-5	IN HOLD CIRCUIT TO THIS RELAY.

REPLAY RELAY

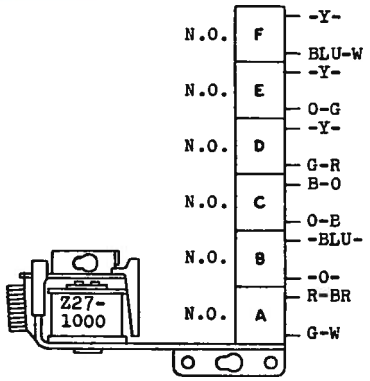
IS ENERGIZED BY REPLAY BUTTON, THRU ZERO SWITCH ON REPLAY UNIT.



D-5	IN CIRCUIT TO REPLAY UNIT RESET COIL.
D-4	ENERGIZES COIN RELAY.
D-4	IN HOLD CIRCUIT TO THIS RELAY.

COIN RELAY

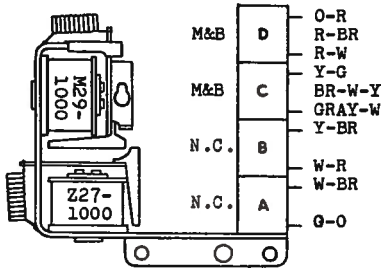
IS ENERGIZED BY COIN SWITCH, 5¢ RELAY OR REPLAY RELAY.



C-11	IN CIRCUIT TO GAME-OVER RELAY.
C-5	RUNS SCORE MOTOR.
C-5	ENERGIZES RESET RELAY, THRU SWITCH ON GAME-OVER RELAY.
D-4	ENERGIZES LOCK RELAY.
C-2	ENERGIZES 110V. RELAY BANK RESET COIL, THRU CAM SWITCH 1D.
D-3	IN HOLD CIRCUIT TO THIS RELAY.

2ND COIN RELAY
(INTERLOCK)

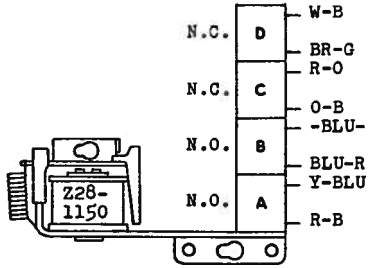
LATCH AND TRIP COILS ARE ENERGIZED BY SWITCH D ON COIN RELAY, THRU SWITCH E ON RESET RELAY.



D-7	PULSES BALL COUNT UNIT, THRU CAM SWITCH 1B.
A-6	OPENS TO "1 CAN PLAY" LITE AND CLOSES TO "2 CAN PLAY" LITE.
E-11	ENERGIZES PLAYER RELAY, THRU BALL COUNT UNIT DISC.
E-4	IN CIRCUIT TO REPLAY RELAY.

EXTRA BALL RELAY

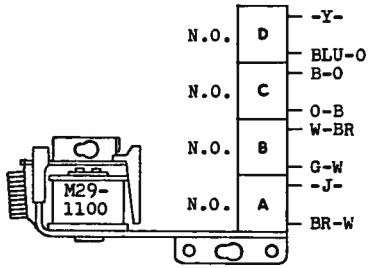
IS ENERGIZED BY SWITCH 1D ON STRIKE RELAY AND SWITCH B ON 3RD STRIKE RELAY.
IT IS ALSO ENERGIZED BY HI-SCORE CIRCUITS IF ADJUSTMENT JACK IS IN EXTRA BALL POSITION.



E-12	IN CIRCUIT TO BALL INDEX RELAY.
D-8	IN CIRCUIT TO BALL COUNT S.U. COIL.
A-9	TO "SAME PLAYER SHOOTS AGAIN" LITES.
E-12	IN HOLD CIRCUIT TO THIS RELAY.

5¢ RELAY

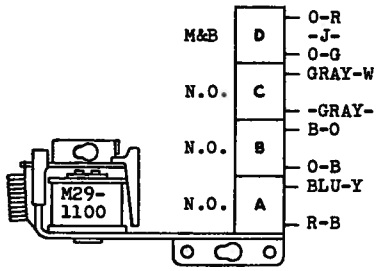
IS ENERGIZED BY 5¢ COIN SWITCH.



C-8	ENERGIZES ALTERNATOR UNIT.
D-4	ENERGIZES LOCK RELAY.
D-4	ENERGIZES COIN RELAY, THRU SWITCH ON ALTERNATOR UNIT.
D-3	IN HOLD CIRCUIT TO THIS RELAY.

10¢ RELAY

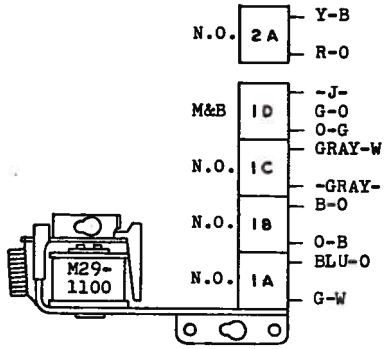
IS ENERGIZED BY 10¢ COIN SWITCH, IF 10¢ ADJUSTMENT JACK IS IN "2 PLAYS" OR "3 PLAYS" POSITION.



D-5	OPENS IN CIRCUIT TO KNOCKER COIL AND CLOSES TO RUN SCORE MOTOR.
D-7	PULSES REPLAY S.U. COIL, THRU IMPULSE CAM SWITCH A.
D-4	ENERGIZES LOCK RELAY.
E-2	IN HOLD CIRCUIT TO THIS RELAY.

25¢ RELAY

IS ENERGIZED BY 25¢ COIN SWITCH.

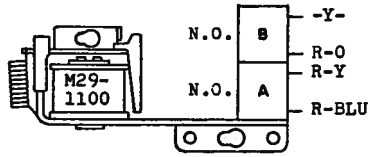


D-3	IN HOLD CIRCUIT TO THIS RELAY.
D-5	OPENS IN CIRCUIT TO KNOCKER COIL, AND CLOSES TO RUN SCORE MOTOR.
D-7	PULSES REPLAY S.U. COIL, THRU IMPULSE CAM SWITCH A.
D-4	ENERGIZES LOCK RELAY.
D-4	PULSES COIN RELAY, IF GAME IS ADJUSTED TO "6 PLAYS FOR 25¢".

LOCATED ON PLAYFIELD

POST RELAY

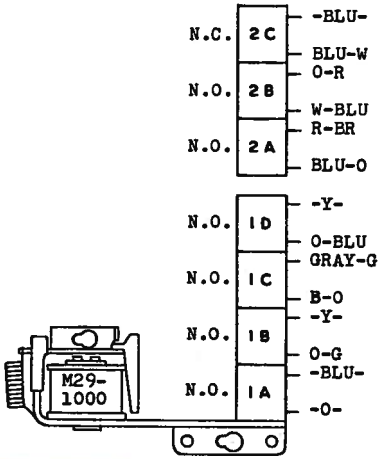
IS ENERGIZED BY LEFT SIDE OR RIGHT SIDE ROLLOVER, AND BY ROLLOVER BUTTON AS INDICATED (DOWN POST).



C-10	ENERGIZES "DOWN POST" RELAY.
E-10	IN HOLD CIRCUIT TO THIS RELAY.

STRIKE RELAY

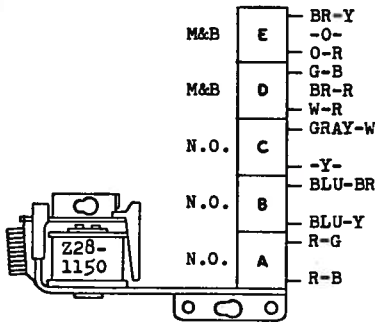
IS ENERGIZED WHEN NO.1 TO NO.10 RELAYS ARE TRIPPED.
ALSO BY CENTER TOP ROLLOVER SWITCH (FOR 1ST STRIKE ONLY).



A-3	OPENS CIRCUIT TO ALL 10 PIN LITES ON PLAYFIELD.
C-16	ENERGIZES 300 RELAY.
C-12	IN HOLD CIRCUIT TO THIS RELAY.
C-12	ENERGIZES EXTRA BALL RELAY WHEN 3RD STRIKE IS MADE.
C-6	ENERGIZES REPLAY S.U. OR EXTRA BALL RELAY FOR EVERY STRIKE AFTER THE 3RD STRIKE.
C-4	RUNS SCORE MOTOR.
C-2	ENERGIZES 110V. RELAY BANK RESET COIL AT CAM SWITCH 1D.

"D" RELAY

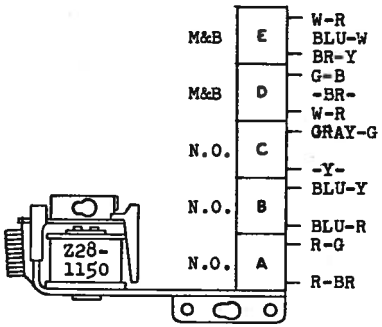
IS ENERGIZED BY "D" TARGET SWITCH.



E-16	OPENS IN CIRCUIT TO 100 POINT RELAY AND CLOSES TO 300 POINT RELAY.
E-16	OPENS IN CIRCUIT TO 1 POINT RELAY AND CLOSES TO 10 POINT RELAY.
B-8	TO RIGHT TOP JET BUMPER LITE AND RIGHT BOTTOM ROLLOVER LITE.
E-13	ENERGIZES GATE RELAY, THRU SWITCHES ON "A", "B" AND "C" RELAYS.
E-13	IN HOLD CIRCUIT TO THIS RELAY.

"C" RELAY

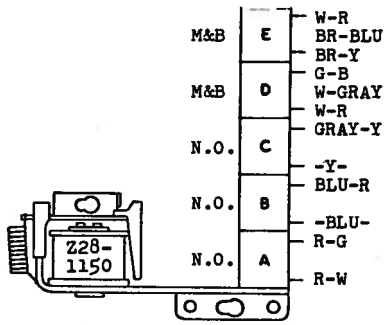
IS ENERGIZED BY "C" TARGET SWITCH.



E-16	OPENS IN CIRCUIT TO 10 POINT RELAY AND CLOSES TO 100 POINT RELAY.
E-16	OPENS IN CIRCUIT TO 1 POINT RELAY AND CLOSES TO 10 POINT RELAY.
B-8	TO RIGHT BOTTOM JET BUMPER LITE AND RIGHT SIDE ROLLOVER LITE.
D-13	IN SERIES WITH SWITCH B ON "D" RELAY.
E-13	IN HOLD CIRCUIT TO THIS RELAY.

"B" RELAY

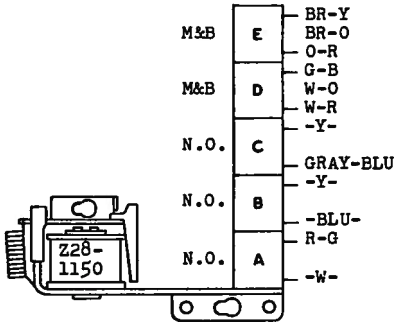
IS ENERGIZED BY "B" TARGET SWITCH.



E-16	OPENS IN CIRCUIT TO 10 POINT RELAY AND CLOSES TO 100 POINT RELAY.
E-15	OPENS IN CIRCUIT TO 1 POINT RELAY AND CLOSES TO 10 POINT RELAY.
B-8	TO LEFT TOP JET BUMPER LITE AND LEFT SIDE ROLLOVER LITE.
D-13	IN SERIES WITH SWITCH B ON "C" RELAY.
E-13	IN HOLD CIRCUIT TO THIS RELAY.

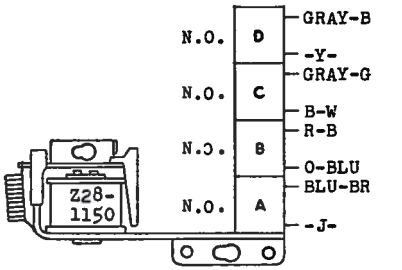
"A" RELAY

IS ENERGIZED BY "A" TARGET SWITCH.



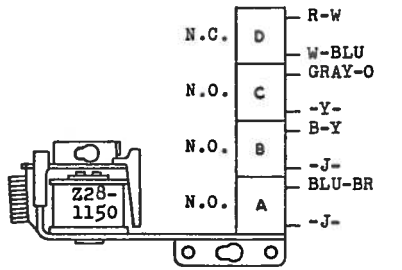
3RD STRIKE RELAY

IS ENERGIZED, WHEN A STRIKE IS MADE, BY CAM SWITCH 1A, THRU SWITCH ON 2ND STRIKE RELAY.



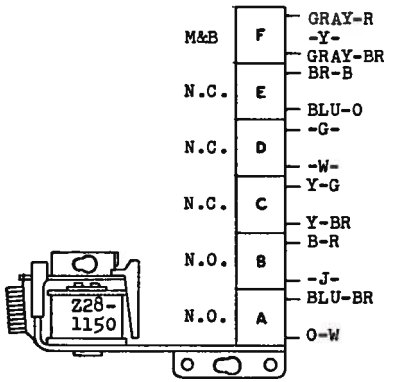
2ND STRIKE RELAY

IS ENERGIZED, WHEN A STRIKE IS MADE, BY CAM SWITCH 2A, THRU SWITCH ON 1ST STRIKE RELAY.



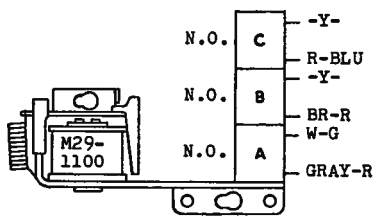
1ST STRIKE RELAY

IS ENERGIZED, WHEN A STRIKE IS MADE, BY CAM SWITCH 3A.



NO. 4 BUMPER RELAY

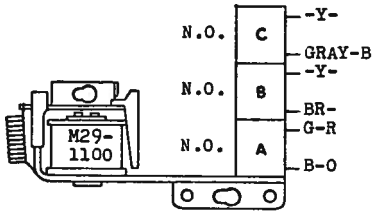
IS ENERGIZED BY RIGHT TOP JET BUMPER SWITCH.



C-9	ENERGIZES RIGHT TOP JET BUMPER COIL.
C-16	IN SERIES WITH SWITCH D ON "D" RELAY.
E-18	IN HOLD CIRCUIT TO THIS RELAY.

NO. 3 BUMPER RELAY

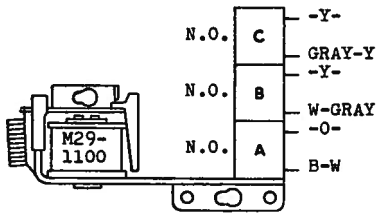
IS ENERGIZED BY RIGHT BOTTOM JET BUMPER SWITCH.



C-8	ENERGIZES RIGHT BOTTOM JET BUMPER COIL.
C-16	IN SERIES WITH SWITCH D ON "C" RELAY.
E-18	IN HOLD CIRCUIT TO THIS RELAY.

NO. 2 BUMPER RELAY

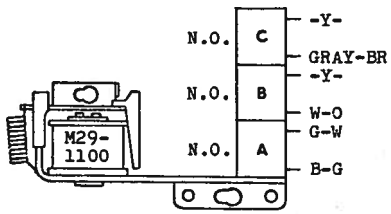
IS ENERGIZED BY LEFT TOP JET BUMPER SWITCH.



C-8	ENERGIZES LEFT TOP JET BUMPER COIL.
C-15	IN SERIES WITH SWITCH D ON "B" RELAY.
E-18	IN HOLD CIRCUIT TO THIS RELAY.

NO. 1 BUMPER RELAY

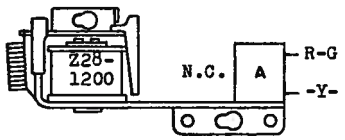
IS ENERGIZED BY LEFT BOTTOM JET BUMPER SWITCH.



C-8	ENERGIZES LEFT BOTTOM JET BUMPER COIL.
C-15	IN SERIES WITH SWITCH D ON "A" RELAY.
E-18	IN HOLD CIRCUIT TO THIS RELAY.

GATE RELAY

IS ENERGIZED BY SWITCHES ON "A", "B", "C" AND "D" RELAYS.



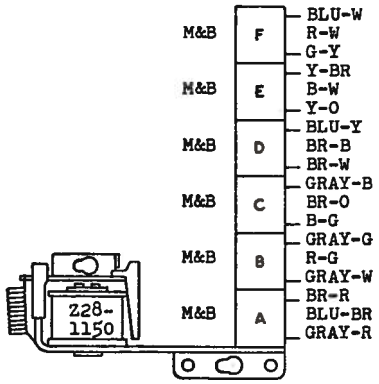
C-13

IN HOLD CIRCUITS TO "A", "B", "C" AND "D" RELAYS.

LOCATED IN BACKBOX

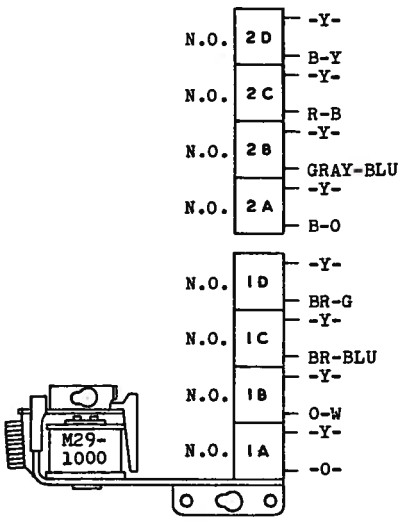
PLAYER RELAY

IS ENERGIZED BY 2ND COIN RELAY, THRU BALL COUNT UNIT DISC.



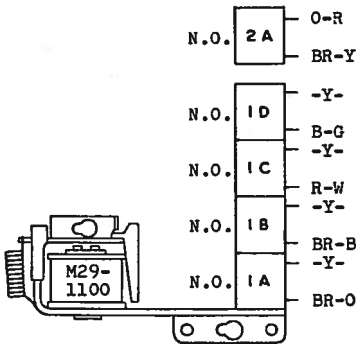
SCORE RESET RELAY

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



100 POINT RELAY

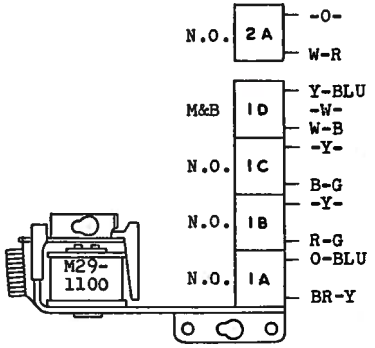
IS PULSED BY (3) TOP ROLLOVERS AND 300 RELAY.
ALSO BY SIDE ROLLOVERS AND BOTTOM ROLLOVERS, AS INDICATED.



E-17	IN HOLD CIRCUIT TO THIS RELAY.
C-19	PULSES LARGE BELL COIL.
C-5	IN SERIES WITH SWITCH F ON PLAYER RELAY.
C-10	IN SERIES WITH SWITCH D ON PLAYER RELAY.
C-9	IN SERIES WITH SWITCH C ON PLAYER RELAY.

10 POINT RELAY

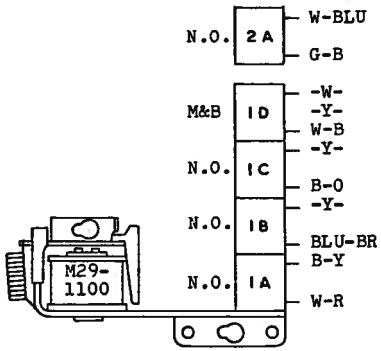
IS PULSED BY JET BUMPERS AND SIDE ROLLOVERS, AS INDICATED.



E-17	IN HOLD CIRCUIT TO THIS RELAY.
D-12	OPENS IN HOLD CIRCUIT TO EXTRA BALL RELAY AND CLOSES TO BALL INDEX RELAY.
C-18	PULSES LARGE BELL COIL.
C-9	IN SERIES WITH SWITCH B ON PLAYER RELAY.
E-17	PULSES 100 POINT RELAY, THRU 9TH POSITION SWITCHES ON 10 POINT DRUM UNITS.

1 POINT RELAY

IS PULSED BY (10) PIN ROLLOVER BUTTONS, STANDUP SWITCHES, KICKER SWITCHES, AND JET BUMPERS, AS INDICATED.

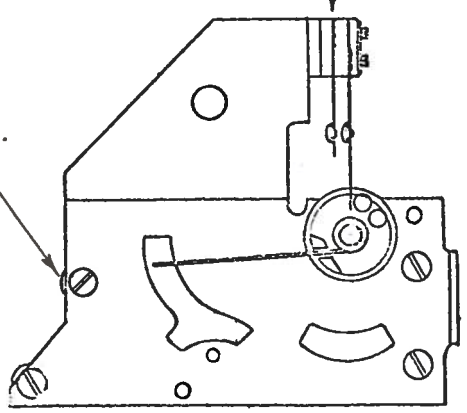


E-17	IN HOLD CIRCUIT TO THIS RELAY.
C-12	IN SERIES WITH SWITCH 1D ON 10 POINT RELAY.
C-18	ENERGIZES NUMBER MATCH S.U. COIL.
C-9	IN SERIES WITH SWITCH A ON PLAYER RELAY.
E-17	PULSES 10 POINT RELAY, THRU 9TH POSITION SWITCHES ON 1 POINT DRUM UNITS.

CONVERTING FROM (10¢-25¢) PLAY TO (2/25¢ - 2/25¢) PLAY

REPLACE 10¢ COIN CHUTE WITH 25¢ COIN CHUTE.
REPLACE 10¢ COIN INSERT PLATE WITH (1A-4215) 25¢ COIN INSERT PLATE.
REPLACE 10¢ IDENTIFICATION PLATE WITH (16C-8640-100) 2 PLAYS-QUARTER.
REPLACE 10¢ COIN SWITCH WITH 25¢ COIN SWITCH (3M-3)

REMOVE MACHINE SCREW AND SPACER IN "COIN TRIP AND SWITCH ASSEMBLY "B-6853, TO ALLOW QUARTER TO PASS THRU.



B-6853 COIN TRIP & SWITCH ASS'Y.

TO CONVERT FROM (5¢ 5¢ - 10¢ - 25¢) TO (2/25¢ - 2/25¢)

REPLACE (5¢ 5¢) COIN TRIP AND SWITCH ASSEMBLY WITH B-6853 (10¢) COIN TRIP AND SWITCH ASSEMBLY.
REPLACE 5¢ COIN CHUTE WITH 25¢ COIN CHUTE.
REPLACE 5¢ COIN INSERT PLATE WITH (1A-4215) 25¢ COIN INSERT PLATE.
REPLACE 5¢ IDENTIFICATION PLATE WITH (16C-8640-100) 2 PLAYS - QUARTER.
MAKE CHANGES ON B-6853 "COIN TRIP AND SWITCH ASSEMBLY" AS SHOWN ABOVE.
USE PART NO. 16A-8636 (DUMMY COIN ENTRY COVER) ON CENTER CHUTE.

WIRING INSTRUCTIONS

AT ORIGINAL 25¢ COIN SWITCH, UNSOLDER GREEN-ORANGE WIRE (A) AND TAPE IT. REMOVE TAPE FROM WHITE-BLUE WIRE AND SOLDER IN ITS PLACE.

AT NEW 25¢ COIN SWITCH, REMOVE TAPE FROM GREEN-ORANGE, WHITE-BLUE AND RED-ORANGE WIRES AND SOLDER AS SHOWN BY DOTTED LINES (A'), (B) AND (C).

INSERT 25¢ ADJUSTMENT JACK INTO "2 PLAYS FOR QUARTER" POSITION.

