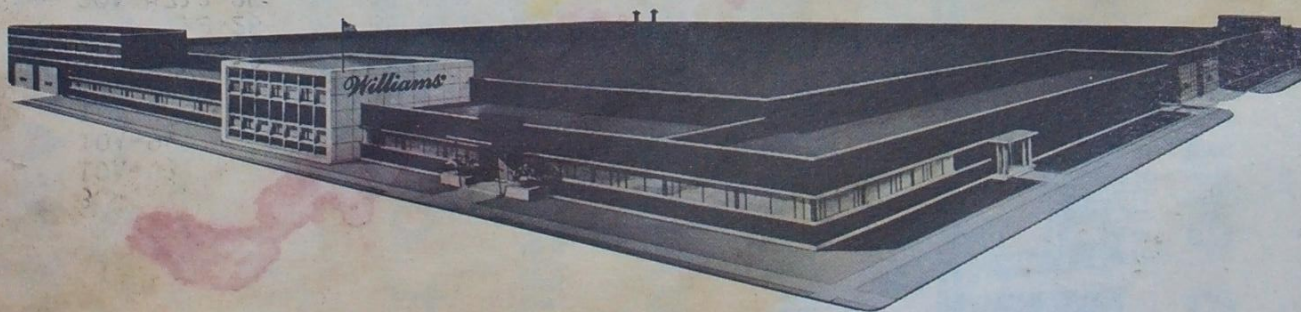


Instruction Manual

for

STARDUST



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.**

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.

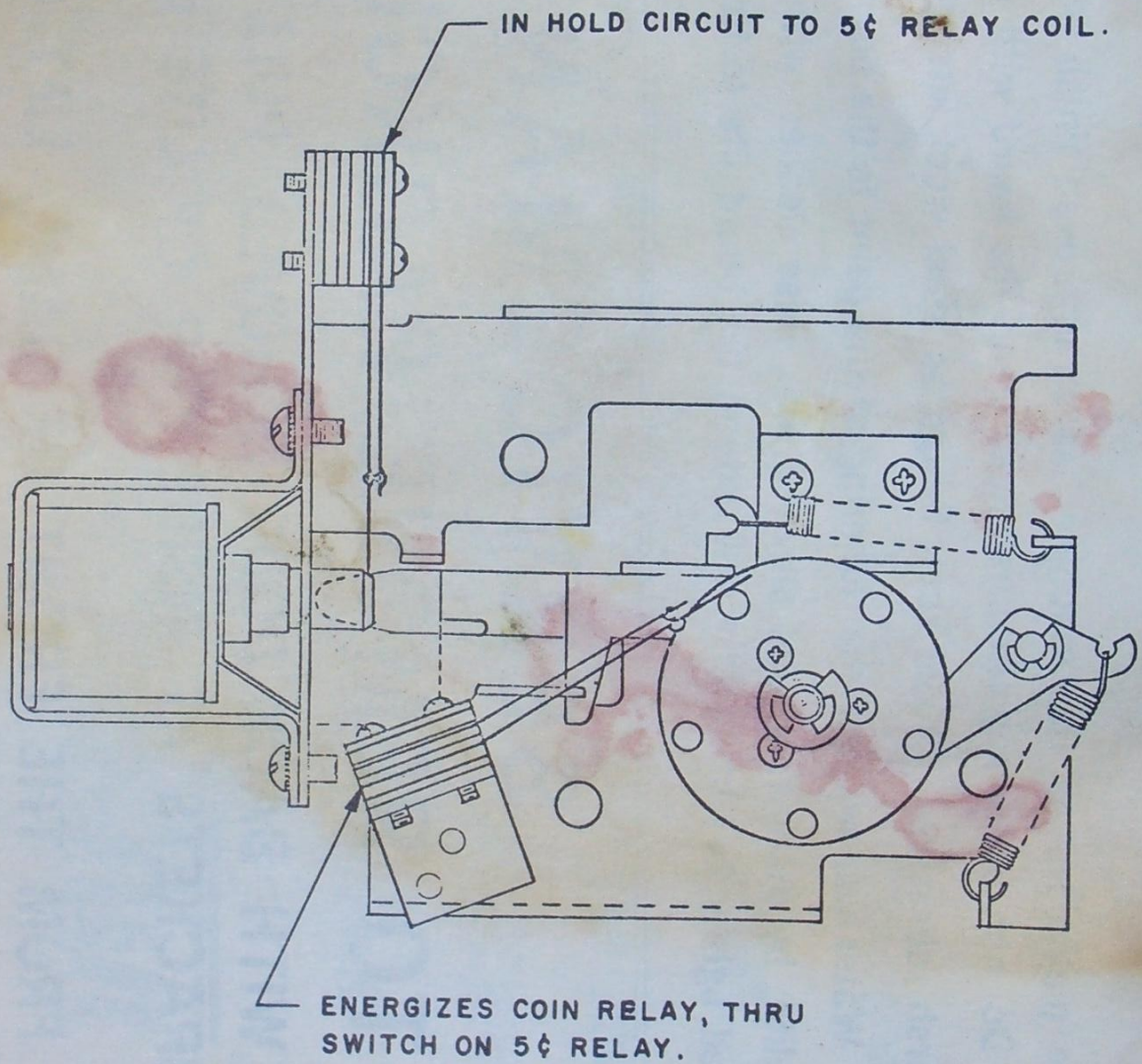
SERVICEMAN TO REMOVE BACKGLASS:

- **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

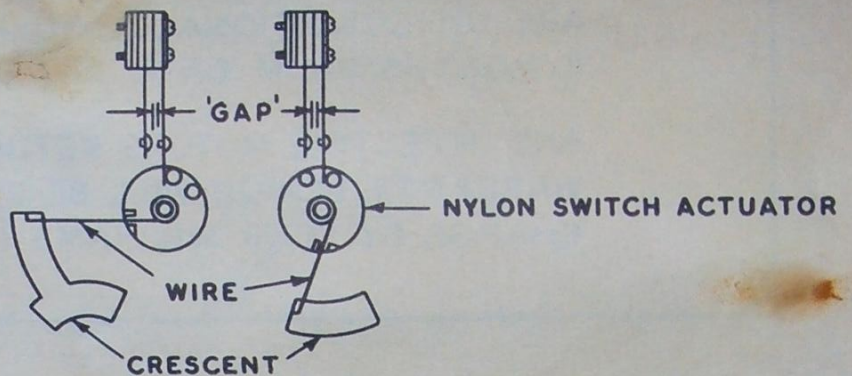
LOCATED ON MECHANISM PANEL.

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



RULES 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.

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 increase secondary voltage for proper operation.

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 legs to increase pitch.

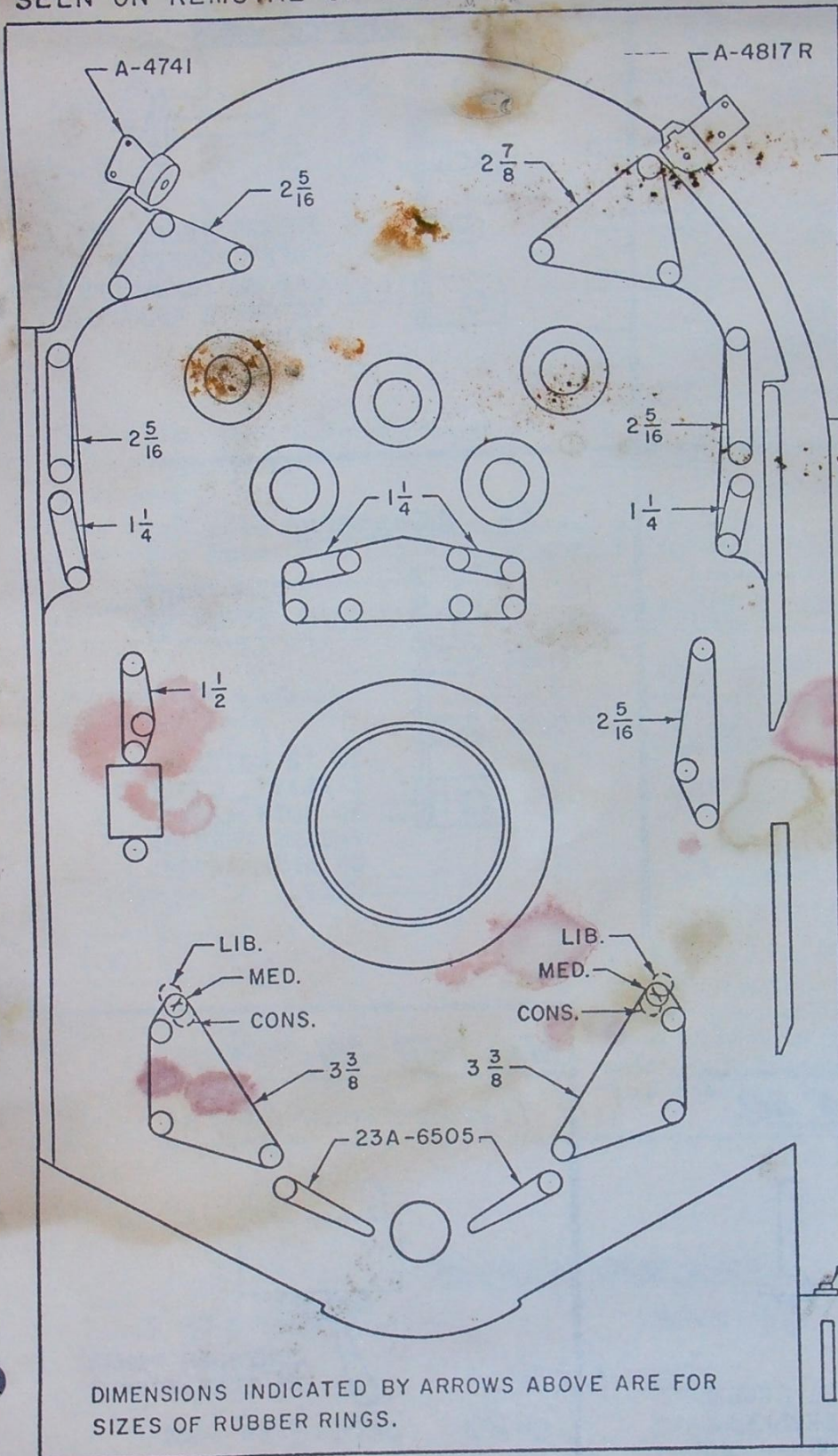
NOTICE:

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

NUMBER	DESCRIPTION	LOCATION
14 A 7805	SCORE MOTOR - 60 CYCLE	MECH. PANEL
14 A 7806	SCORE MOTOR - 50 CYCLE	MECH. PANEL
15 A 6771	TRANSFORMER - 60 CYCLE	MECH. PANEL
15 A 6782-1	TRANSFORMER - 50 CYCLE	MECH. PANEL
B 6396	PLAY METER (COIL XM 27-675)	MECH. PANEL
<u>SOLENOID COILS</u>		
A 22-550	MATCH UNIT STEP UP BALL RELEASE COIL	INSERT PLAYFIELD
	PLAYER UNIT STEP UP COIN UNIT STEP UP	INSERT MECH. PANEL
A 23-600	BALL COUNT UNIT STEP UP REPLAY UNIT STEP UP BONUS UNIT STEP UP	MECH. PANEL INSERT PLAYFIELD
A2-23-750	LARGE BELL KNOCKER	MECH. PANEL MECH. PANEL
BL26-800 B 26-800	SCORE DRUM UNIT ... (16 req'd.) PLAYER UNIT RESET REPLAY UNIT RESET BONUS UNIT RESET BALL COUNT UNIT RESET COIN UNIT RESET ALTERNATOR UNIT ADVANCE STEP UP	INSERT INSERT INSERT PLAYFIELD MECH. PANEL MECH. PANEL MECH. PANEL PLAYFIELD
FL 21-375/28-400	FLIPPER COILS ... (2 req'd.)	PLAYFIELD
G 22-550	JET BUMPER COILS ... (5 req'd.)	PLAYFIELD
G 23-750	KICKER COILS ... (2 req'd.) DISAPPEARING POST (LATCH COIL) EJECT COIL ... (2 req'd.)	PLAYFIELD PLAYFIELD PLAYFIELD
<u>RELAY COILS</u>		
M1-31-1500	COIN LOCKOUT	DOOR
M 29-1000	DISAPPEARING POST (TRIP) 1st & 2nd SCORE RESET RELAY 3rd & 4th SCORE RESET RELAY GAME OVER RELAY	PLAYFIELD INSERT INSERT MECH. PANEL
M 29-1100	10 POINT RELAY 100 POINT RELAY 1,000 POINT RELAY 500 RELAY 5,000 RELAY 5¢ RELAY 10¢ RELAY 25¢ RELAY BONUS RELAY DOUBLE BONUS RELAY TRIPLE BONUS RELAY BONUS UNIT ESCAPEMENT COIL POST RELAY ADVANCE RELAY NO. 1 BUMPER RELAY NO. 2 BUMPER RELAY NO. 3 BUMPER RELAY NO. 4 BUMPER RELAY NO. 5 BUMPER RELAY	INSERT INSERT INSERT PLAYFIELD PLAYFIELD MECH. PANEL MECH. PANEL MECH. PANEL PLAYFIELD PLAYFIELD PLAYFIELD PLAYFIELD PLAYFIELD PLAYFIELD PLAYFIELD PLAYFIELD PLAYFIELD PLAYFIELD PLAYFIELD PLAYFIELD
Z 27-1000	PLAYER RESET RELAY OUTHOLE RELAY RESET RELAY REPLAY RELAY EJECT RELAY COIN RELAY GAME OVER RELAY	MECH. PANEL MECH. PANEL MECH. PANEL MECH. PANEL MECH. PANEL MECH. PANEL MECH. PANEL
Z 28-1150	GATE RELAY ... (3 req'd.) TILT RELAY EXTRA BALL RELAY	PLAYFIELD MECH. PANEL MECH. PANEL
Z 28-1200	BALL INDEX RELAY	MECH. PANEL
M 30-1400	ON YELLOW RELAY ON GREEN RELAY	PLAYFIELD PLAYFIELD
Z 29-1250	LOCK RELAY	MECH. PANEL

"STARDUST" - 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-6304 1 1/2 I.D.
23A-6306 2 5/16 I.D.
23A-6307 2 7/8 I.D.
23A-6308 3 3/8 I.D.

23A-6505 FLIPPER
RUBBER RING

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

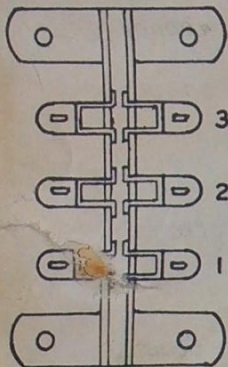
23A-6327 BALL SHOOTER
RUBBER TIP

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

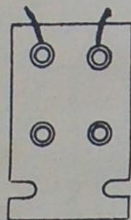
16A-401 PA

ADJUSTMENTS MECHANISM PANEL

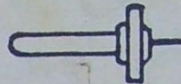
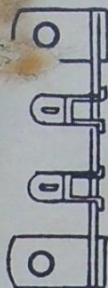
10¢ Adjustment



PROVIDES
1, 2 OR
3 PLAYS
FOR ONE
COIN.

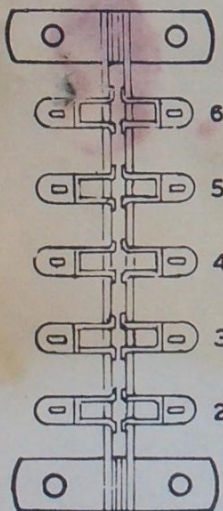


Motor Service Jack

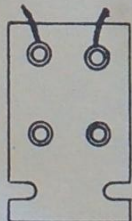


ON
OFF
INSERT PHONE TIP IN
"OFF" POSITION - CAMS
CAN BE TURNED BY HAND
TO CHECK ADJUSTMENT OF
SWITCHES.

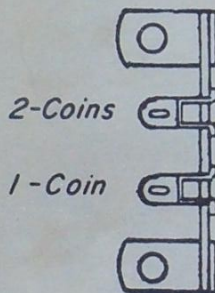
25¢ Adjustment



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



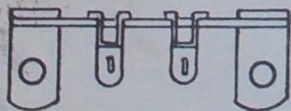
5¢ Adjustment



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

Extra Ball Jack Adj.

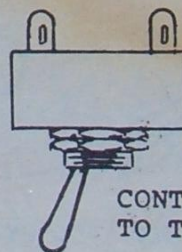
REPLAY → EXTRA BALL



IN REPLAY POSITION, HI SCORES
AND NUMBER MATCH AWARD REPLAYS.
IN EXTRA BALL POSITION--- SEE
EXPLANATION OF EXTRA BALL RELAY
& COIL.

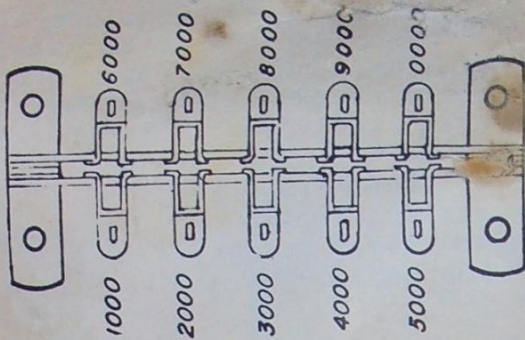
MASTER ON-OFF SW.

(Located under front of
Cabinet)

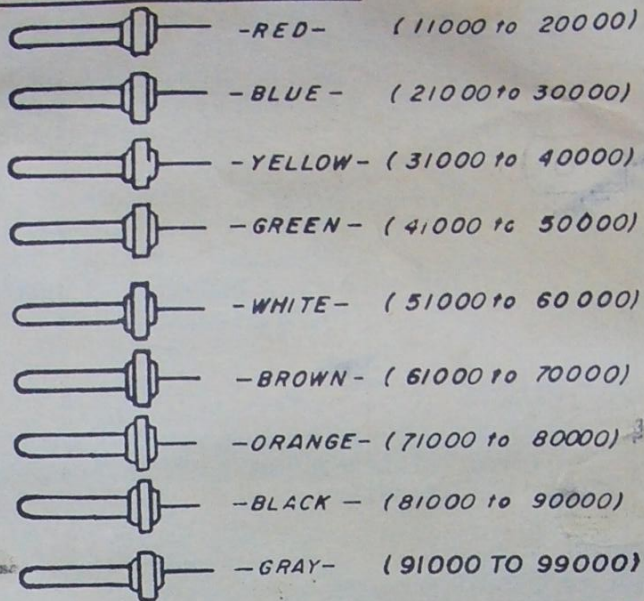


CONTROLS POWER
TO TRANSFORMER

ADJUSTMENTS IN BACKBOX



HI-Score Adjustment



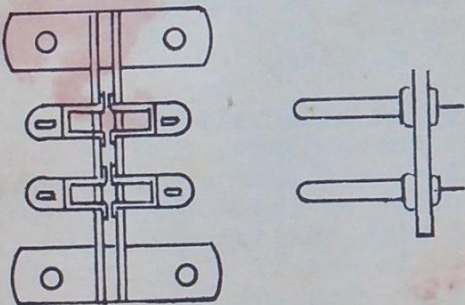
Insert plugs into 10 Point Female at desired positions.

Examples:

Yellow wire into 3000 position scores at 33000.
 Yellow wire into 0000 position scores at 40000.

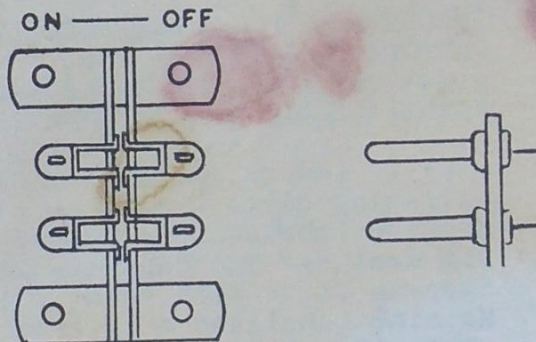
No. of Balls Adjustment

3 BALL — 5 BALL



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

NUMBER MATCH ADJUSTMENT



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

SUGGESTED SCORE CARDS

5 BALL PLAY 401-13

3BALL PLAY 401-4

ON NOVELTY PLAY

5 BALL EXTRA BALL 401-24

3 BALL EXTRA BALL 401-19

1. GENERAL

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

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

2. FUSES

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

3. LUBRICATION

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

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

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

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

SWITCH ADJUSTMENT

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

BALL COUNT UNIT DISC

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

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

TRIPS GAME OVER RELAY
IN 5 BALL GAME.

TRIPS GAME OVER RELAY
IN 3 BALL GAME.

BALL IN PLAY LITES

DIAGRAM
LOCATION
↓

C-17 BLU-R

C-17 BLU-BR

W-B

B-Y

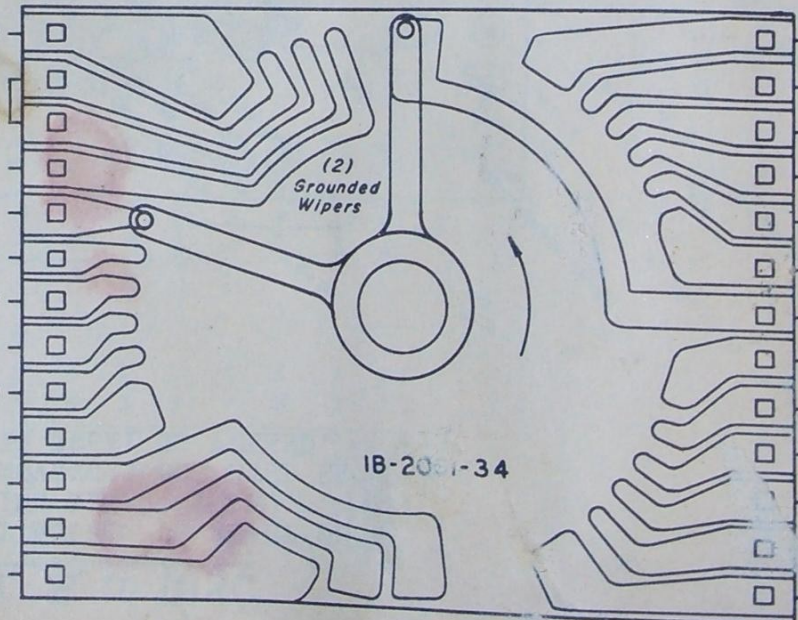
B-3 GREY-Y

GREY-G

GREY-BR

(2)
Grounded
Wipers

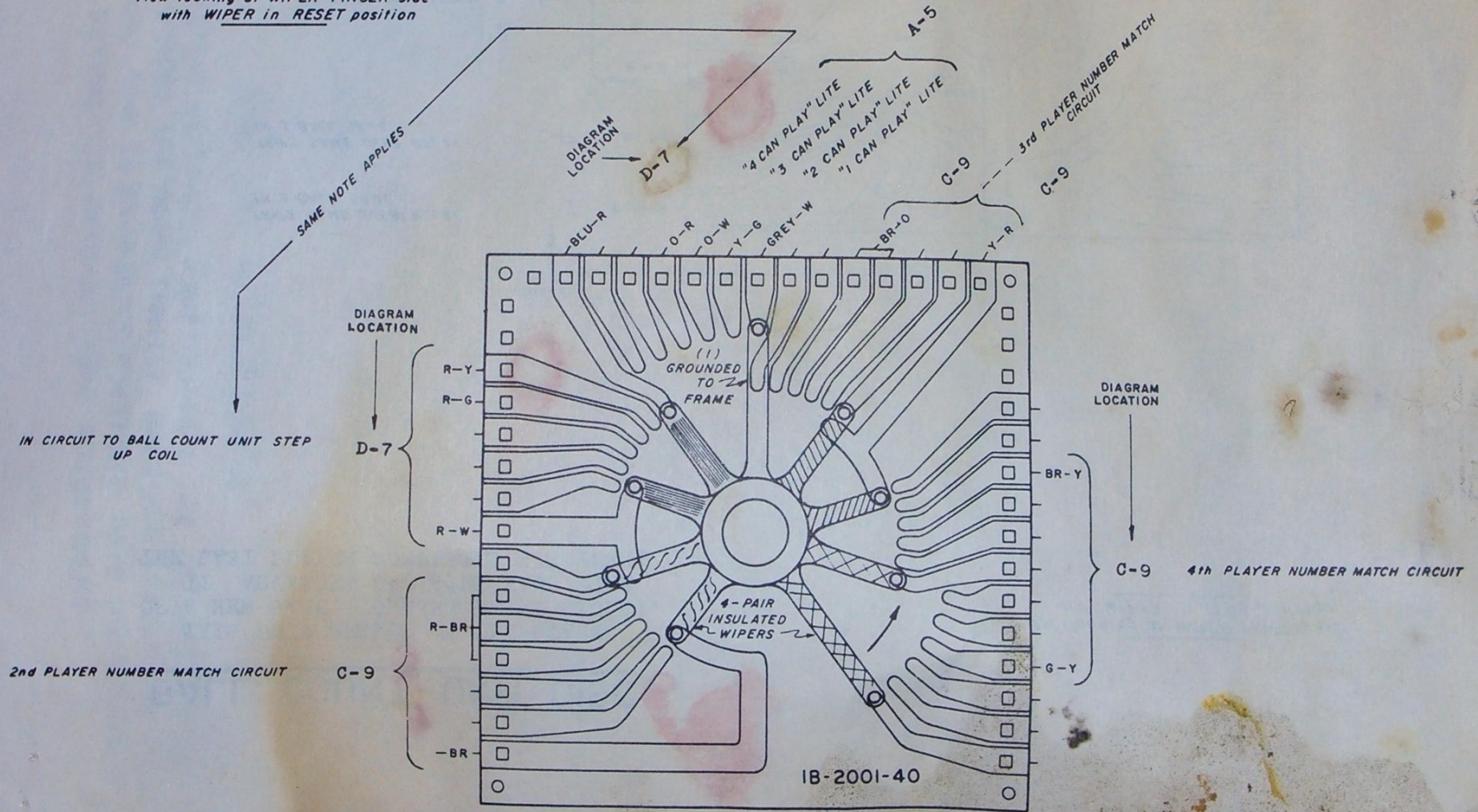
1B-2001-34



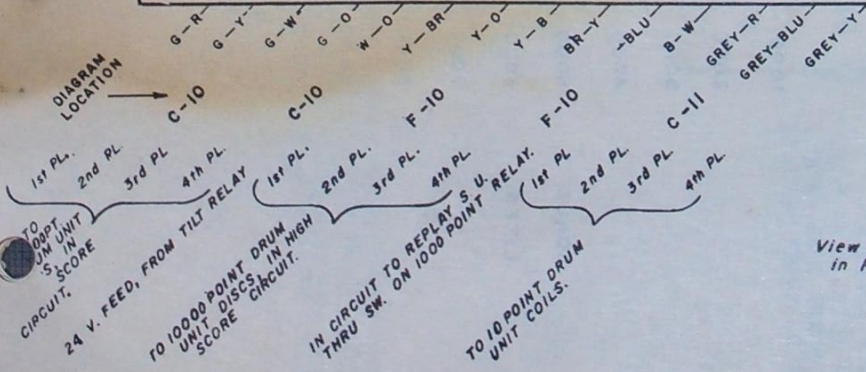
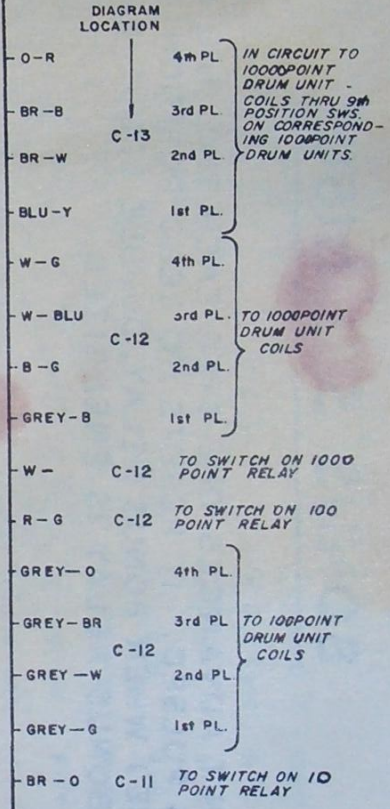
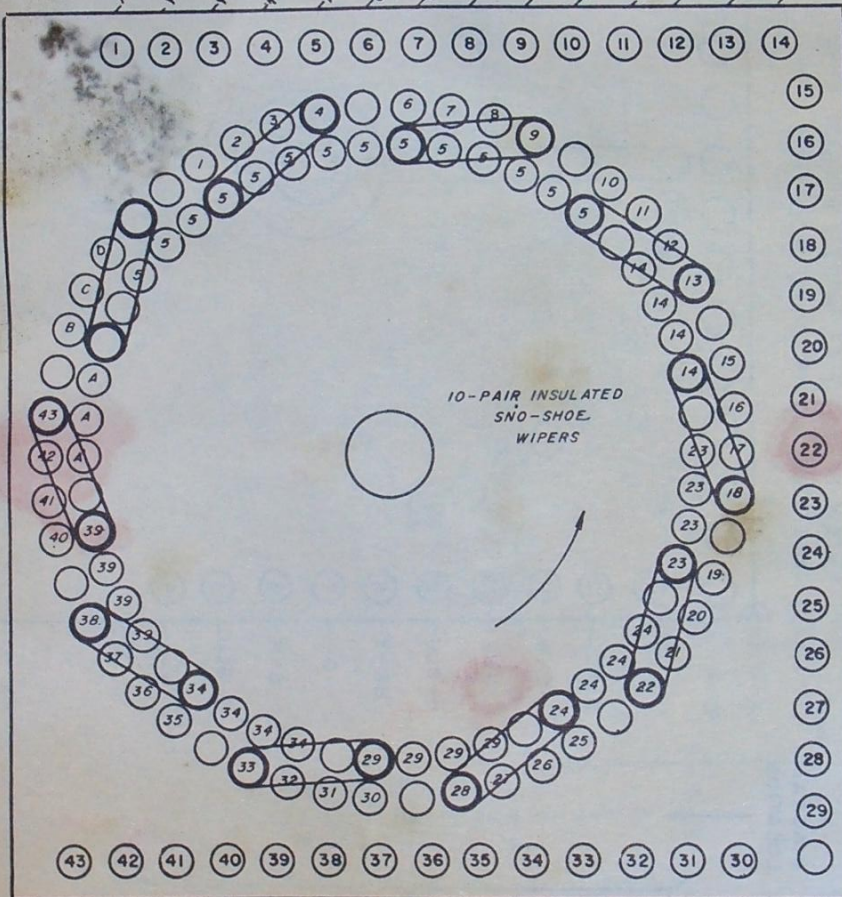
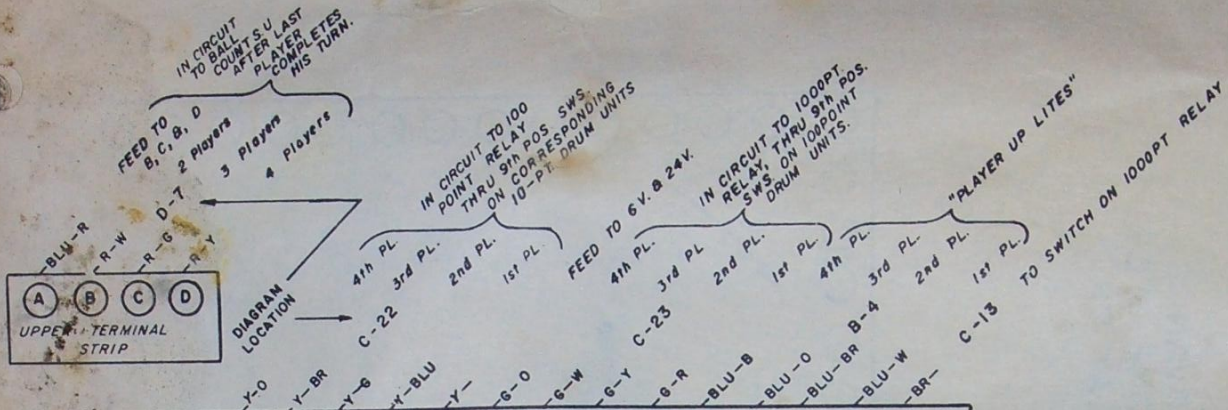
COIN S. U. DISC

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

View looking at WIPER FINGER side with WIPER in RESET position



PLAYER UNIT DISC

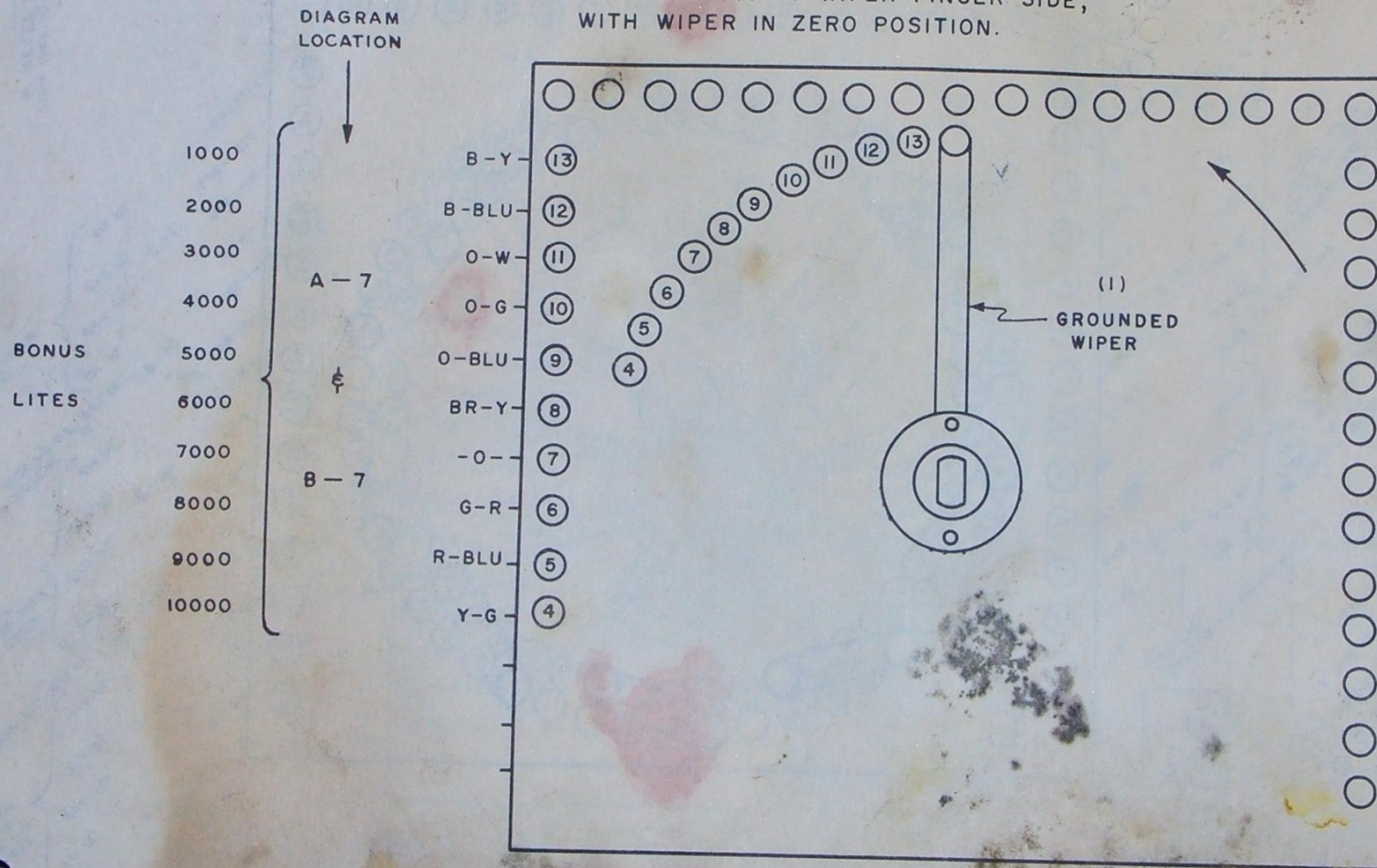


View looking at WIPER FINGER side with unit in RESET position (1st Player Up)

BONUS S. U. DISC

THIS UNIT ADVANCES ONE STEP EACH TIME THE ADVANCE RELAY IS PULSED. IT RESETS TO ZERO POSITION (ONE STEP AT A TIME) WHEN BONUS RELAY, DOUBLE BONUS RELAY OR TRIPLE BONUS RELAY IS ENERGIZED.

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



NO. MATCH UNIT DISC

THIS UNIT ADVANCES ONE STEP EACH TIME THE 10 POINT RELAY IS PULSED.

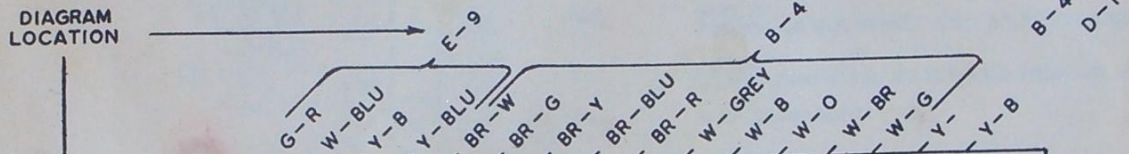
VIEW LOOKING AT WIPER FINGER SIDE

IN NUMBER MATCH CIRCUIT, THESE WIRES COME FROM THE 10 POINT D.U. DISC OF ALL 4 PLAYERS

NUMBER MATCH LITES

FEED TO NUMBER MATCH LITES.
FEED TO LUGS #1, 2 AND 3.

DIAGRAM LOCATION



IN NUMBER MATCH CIRCUIT, THESE WIRES COME FROM THE 10 POINT D.U. DISC OF ALL 4 PLAYERS.

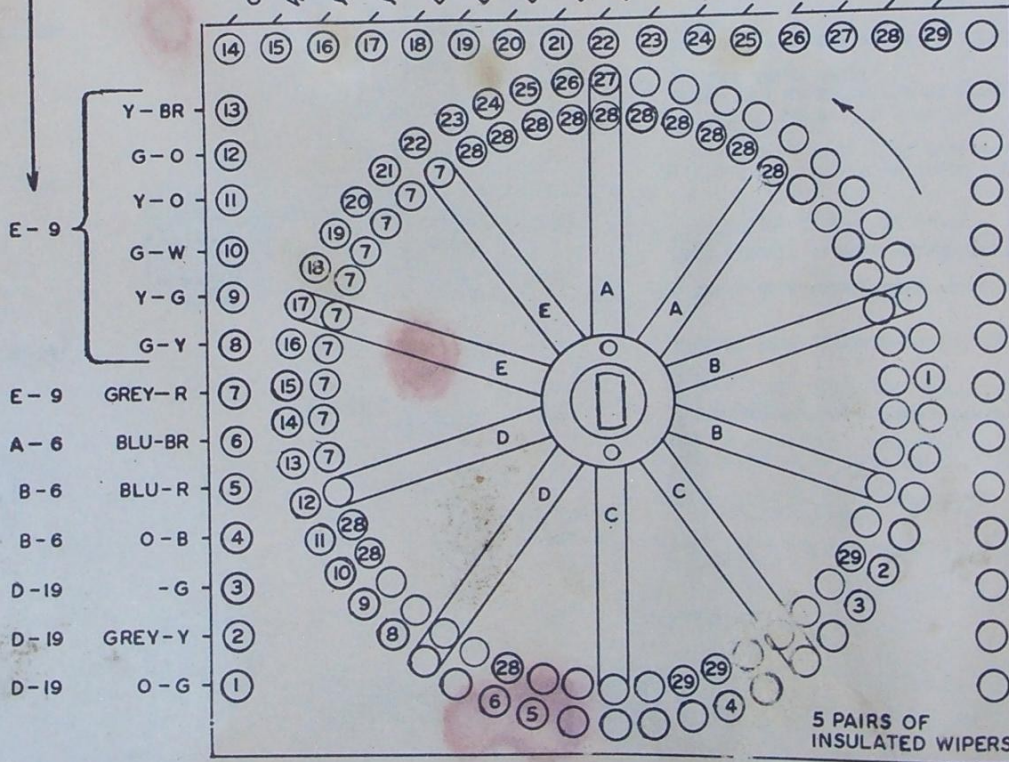
- 20
- 80
- 30
- 70
- 10
- 60

NUMBER MATCH FEED TO REPLAY S.U.

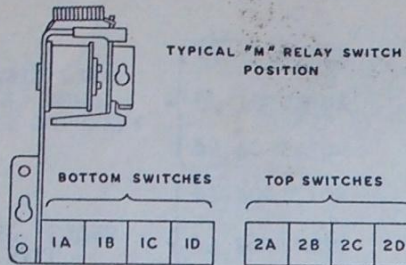
"EXTRA BALL WHEN LIT" LITES

- #9 POSITION
- #5 POSITION
- #1 POSITION
- #9 POSITION
- #5 POSITION
- #1 POSITION

IN CIRCUIT TO EXTRA BALL RELAY, THRU ADVANCE UNIT DISC.



5 PAIRS OF INSULATED WIPERS



RELAYS & SWITCHES

LOCATED ON MECHANISM PANEL

LOCK RELAY

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

SWITCH TYPE DIAGRAM LOCATION

N.C.	D	BLU-R -Y-	C-17
N.O.	C	G-Y-W BLU-Y-W	A-2
N.O.	B	G-Y-W BR-Y-W	A-2
N.O.	A	B-O O-B	D-4

ENERGIZES GAME-OVER RELAY (TRIP COIL).

6 VOLTS FROM TRANSFORMER TO LITES.

6 VOLTS FROM TRANSFORMER TO LITES.

HOLD CIRCUIT TO THIS RELAY, THRU CABINET BOTTOM KICKOFF SWITCH.

EJECT RELAY

IS ENERGIZED BY (2) EJECT POCKET SWITCHES, THRU INDEX CAM SWITCH C.

M&B	F	B-BLU G-R GREY-Y	D-19
N.O.	E	-Y- BR-O	C-15
N.O.	D	-Y- O-G	C-6
N.O.	C	-BR- BR-Y	D-21
N.O.	B	R-BR -W-	C-16
N.O.	A	O-BLU R-Y	E-14

OPENS IN A HOLD CIRCUIT TO EXTRA BALL RELAY AND CLOSSES TO BALL INDEX RELAY.

IN CIRCUIT TO THE RELAY AS INDICATED BY ARROW ON ADVANCE UNIT.

RUNS SCORE MOTOR.

PULSES 1000 POINT RELAY, THRU SWITCHES ON (3) BONUS RELAYS.

CIRCUIT TO 500 RELAY, THRU N.C. SWITCHES ON (3) BONUS RELAYS.

IN HOLD CIRCUIT TO THIS RELAY.

RESET RELAY

IS ENERGIZED BY SWITCH D ON COIN RELAY.

M&B	E	BLU-Y -Y- O-G	C-4 C-6
M&B	D	W-BLU BLU-O O-BLU	E-7
N.C.	C	R-Y-W BLU-Y-W	F-16
N.O.	B	G-Y O-BLU	E-7
N.O.	A	BLU-BR BLU-W	D-6

OPENS IN CIRCUIT TO REPLAY RELAY AND CLOSSES TO RUN SCORE MOTOR.

OPENS IN CIRCUIT TO COIN UNIT S.U. AND CLOSSES TO RESET COILS ON COIN, BALL COUNT AND GAME OVER.

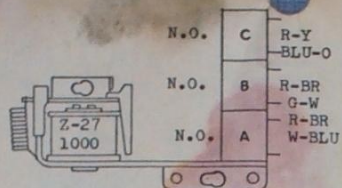
IN SERIES WITH SWITCH A ON GAME-OVER RELAY.

IN CIRCUIT TO PLAYER UNIT RESET COIL.

IN HOLD CIRCUIT TO THIS RELAY.

REPLAY RELAY

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



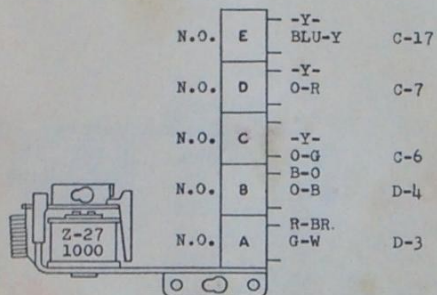
ENERGIZES REPLAY UNIT RESET COIL AT CAM SWITCH 1D.

ENERGIZES COIN RELAY.

IN HOLD CIRCUIT TO THIS RELAY.

COIN RELAY

IS ENERGIZED BY REPLAY RELAY OR COIN SWITCH.



CIRCUIT TO GAME-OVER RELAY (TRIP COIL).

IN SERIES WITH SWITCH B ON GAME-OVER RELAY.

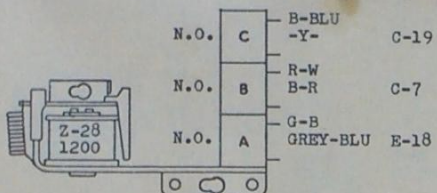
RUNS SCORE MOTOR.

ENERGIZES LOCK RELAY.

IN HOLD CIRCUIT TO THIS RELAY.

BALL INDEX RELAY

IS ENERGIZED BY 10 POINT, 100 POINT OR 1000 POINT RELAY, THRU SWITCH C ON EXTRA BALL RELAY.
IT IS ALSO ENERGIZED BY TILT RELAY.



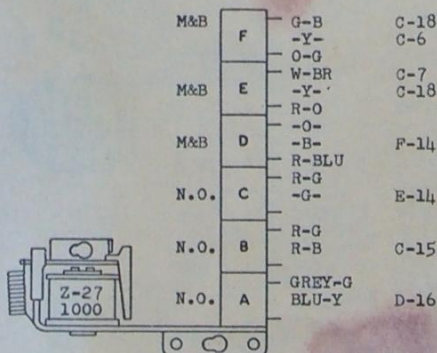
IN SERIES WITH SWITCH A ON EXTRA BALL RELAY.

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

IN HOLD CIRCUIT TO THIS RELAY.

OUTHOLE RELAY

IS ENERGIZED BY OUTHOLE SWITCH, THRU INDEX CAM SWITCH C.



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

OPEN IN HOLD CIRCUIT TO TILT RELAY AND CLOSSES IN SERIES WITH SWITCH B ON EXTRA BALL RELAY.

OPENS CIRCUIT TO (2) EJECT COILS AND CLOSSES TO BONUS UNIT ESCAPEMENT COIL.

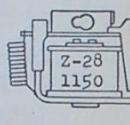
ENERGIZES BONUS UNIT ESCAPEMENT COIL AT SCORE MOTOR CAM SWITCH 1B.

ENERGIZES DOWN POST COIL.

IN HOLD CIRCUIT TO THIS RELAY.

TILT RELAY

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



M&B	E	W-O -Y- GREY-BLU	C-10 C-17
M&B	D	-W- -BLU- BLU-B	A-7
N.C.	C	-R- R-Y-W	F-18
N.O.	B	R-O R-B	E-15
N.O.	A	W-BR Y-R	E-18

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

OPENS IN CIRCUIT TO PLAYFIELD LITES AND CLOSES TO TILT LITE.

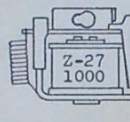
OPENS ALL SCORING CIRCUITS.

ENERGIZES DOWN POST COIL.

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

PLAYER RESET RELAY

IS ENERGIZED BY BALL COUNT UNIT END-OF-STROKE SWITCH. IT THEN HOLDS IN THRU INDEX CAM SWITCH B.



M&B	C	Y-B W-R G-Y GREY-B GREY-G	D-7 F-9
N.O.	B		
N.O.	A	R-BR R-G	C-8

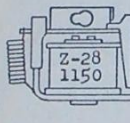
OPENS IN CIRCUIT TO PLAYER UNIT S.U. COIL AND CLOSES TO PLAYE PLAYER UNIT RESET COIL.

IN NUMBER MATCH CIRCUIT TO REPLAY S.U.

HOLD CIRCUIT TO THIS RELAY, THRU INDEX CAM SWITCH B.

EXTRA BALL RELAY

IS ENERGIZED BY HI-SCORE CIRCUIT, THRU "REPLAY-EXTRA BALL" ADJUSTMENT JACK. ALSO BY EJECT RELAY, THRU ADVANCE UNIT DISC AND NUMBER MATCH UNIT DISC.



M&B	D	W-B -BLU- W-G GREY-BLU	A-6 E-17
N.C.	C	BR-G	
N.C.	B	R-W R-O	C-7
N.O.	A	B-BLU Y-B	D-19

OPENS TO (3) "EXTRA BALL WHEN LIT" LITES, AND CLOSES TO "SHOOT AGAIN" LITES.

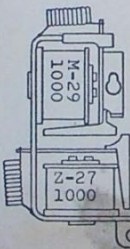
IN CIRCUIT TO BALL INDEX RELAY.

IN SERIES WITH SWITCH B ON BALL INDEX RELAY.

IN HOLD CIRCUIT TO THIS RELAY.

GAME OVER RELAY
INTERLOCK

LATCH COIL IS PULSED BY SCORE MOTOR CAM SWITCH ID, THRU SWITCHES ON COIN RELAY AND RESET RELAY. TRIP COIL IS ENERGIZED BY COIN RELAY, LOCK RELAY OR WIPER ON BALL COUNT UNIT.



M&B	E	GREY-O -BR- BLU-Y	A-4
M&B	D	GREY-G GREY-BR B-W	E-8
N.O.	C	W-BR W-BLU	E-4
N.O.	B	O-R BLU-W	E-6
N.C.	A	-B- BLU-Y-W	F-16

OPENS TO PLAYER UP LITES, AND CLOSES TO NUMBER MATCH AND GAME-OVER LITES.

OPENS IN HI-SCORE CIRCUIT AND CLOSES IN NUMBER MATCH CIRCUIT.

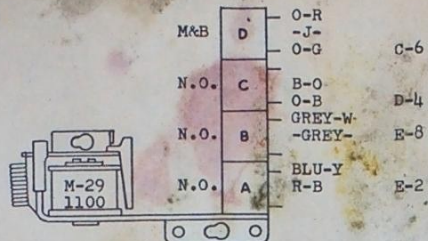
IN CIRCUIT TO REPLAY RELAY.

ENERGIZES RESET RELAY, THRU SWITCH D ON COIN RELAY.

OPENS ALL CIRCUITS TO PLAYFIELD SWITCHES.

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.

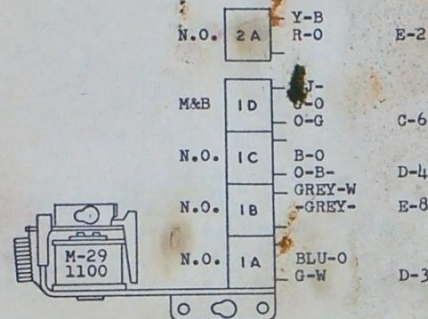
ENERGIZES LOCK RELAY.

PULSES REPLAY UNIT S.U. COIL, THRU IMPULSE CAM SWITCH B.

IN HOLD CIRCUIT TO THIS RELAY.

25¢ RELAY

IS ENERGIZED BY 25¢ COIN SWITCH.



IN HOLD CIRCUIT TO THIS RELAY.

OPENS IN CIRCUIT TO KNOCKER COIL AND CLOSSES TO RUN SCORE MOTOR.

ENERGIZES LOCK RELAY.

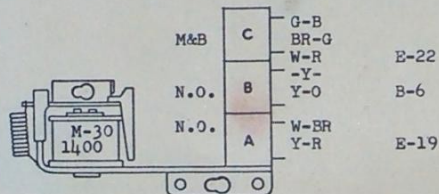
PULSES REPLAY UNIT S.U. COIL, THRU IMPULSE CAM SWITCH B.

ENERGIZES COIN RELAY WHEN GAME IS ADJUSTED TO "6 PLAYS FOR 25¢."

LOCATED ON PLAYFIELD

ON GREEN RELAY

IS ENERGIZED BY RIGHT TOP TARGET SWITCH.



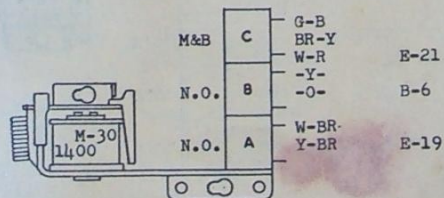
OPENS IN CIRCUIT TO 10 POINT RELAY AND CLOSSES TO 100 POINT RELAY.

TO LEFT BOTTOM AND RIGHT TOP JET BUMPER LITES.

HOLD CIRCUIT TO THIS RELAY, THRU SWITCH E ON OUTHOLE RELAY.

ON YELLOW RELAY

IS ENERGIZED BY LEFT TOP TARGET SWITCH.



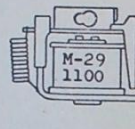
OPENS IN CIRCUIT TO 10 POINT RELAY AND CLOSSES TO 100 POINT RELAY.

TO RIGHT BOTTOM AND LEFT TOP JET BUMPER LITES.

HOLD CIRCUIT TO THIS RELAY, THRU SWITCH E ON OUTHOLE RELAY.

BONUS RELAY

IS ENERGIZED AT CAM SWITCH 5A, THRU EJECT RELAY AND ADVANCE UNIT DISC.



N.C.	D	R-BR -J-	D-16
N.O.	C	BLU-R -BR-	C-21
N.O.	B	GREY-W -G-	E-15
N.O.	A	BR-O G-Y	C-15

IN SERIES WITH SWITCH B ON EJECT RELAY.

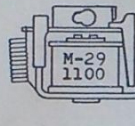
IN SERIES WITH SWITCH C ON EJECT RELAY.

PULSES SINGLE RESET COIL ON BONUS UNIT.

HOLD CIRCUIT TO THIS RELAY, THRU SWITCH E ON EJECT RELAY.

DOUBLE BONUS RELAY

IS ENERGIZED BY CAM SWITCH 5A, THRU EJECT RELAY AND ADVANCE UNIT DISC.



N.C.	D	-J- -J-	D-16
N.O.	C	-BR- GREY-R	C-21
N.O.	B	Y-B -G-	E-15
N.O.	A	BR-O. GREY-O	C-15

IN SERIES WITH SWITCH B ON EJECT RELAY.

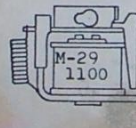
IN SERIES WITH SWITCH C ON EJECT RELAY.

PULSES SINGLE RESET COIL ON BONUS UNIT.

HOLD CIRCUIT TO THIS RELAY, THRU SWITCH E ON EJECT RELAY.

TRIPLE BONUS RELAY

IS ENERGIZED BY CAM SWITCH 5A, THRU EJECT RELAY AND ADVANCE UNIT DISC.



N.O.	2 A	BR-O GREY-BR	C-15
N.C.	1 D	-J- GREY-O	E-16
N.O.	1 C	-BR- GREY-R	C-21
N.O.	1 B	-BR- R-BLU	C-20
N.O.	1 A	Y-B -G-	E-14

HOLD CIRCUIT TO THIS RELAY, THRU SWITCH E ON EJECT RELAY.

IN SERIES WITH SWITCH B ON EJECT RELAY.

IN SERIES WITH SWITCH C ON EJECT RELAY.

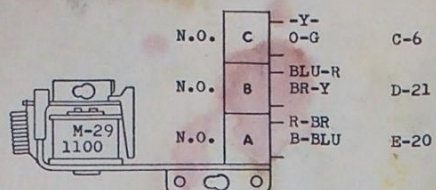
IN SERIES WITH SWITCH G ON EJECT RELAY.

PULSES SINGLE RESET COIL ON BONUS UNIT.

5000 RELAY

IS ENERGIZED BY:

1. RIGHT SIDE ROLLOVER SWITCH, THRU RIGHT GATE RELAY.
2. RIGHT BOTTOM ROLLOVER SWITCH, THRU RIGHT BOTTOM GATE RELAY.
3. LEFT SIDE ROLLOVER SWITCH, THRU LEFT GATE RELAY.



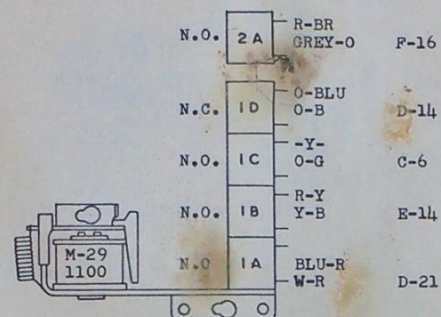
RUNS SCORE MOTOR.

PULSES 1000 POINT RELAY, THRU IMPULSE CAM SWITCH C.

IN HOLD CIRCUIT TO THIS RELAY.

500 RELAY

IS ENERGIZED BY EJECT RELAY, THRU SWITCHES ON BONUS RELAY, DOUBLE BONUS RELAY AND TRIPLE BONUS RELAY.



HOLD CIRCUIT TO THIS RELAY.

IN SERIES WITH SWITCH A ON EJECT RELAY.

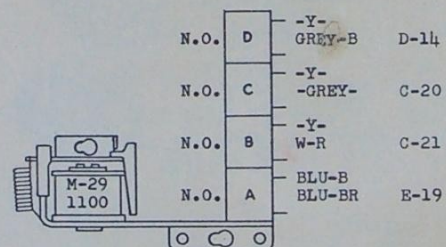
RUNS SCORE MOTOR.

PULSES (2) EJECT COILS AT CAM SWITCH 4D.

PULSES 100 POINT RELAY THRU IMPULSE CAM SWITCH C.

ADVANCE RELAY

IS PULSED BY (2) CENTER TARGET SWITCHES AND (4) TOP STAND-UP SWITCHES.



ENERGIZES BONUS UNIT S.U. COIL.

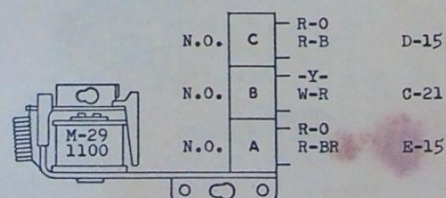
ENERGIZES ADVANCE UNIT COIL.

PULSES 100 POINT RELAY.

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

POST RELAY

IS ENERGIZED BY (2) ROLLOVER BUTTON SWITCHES.



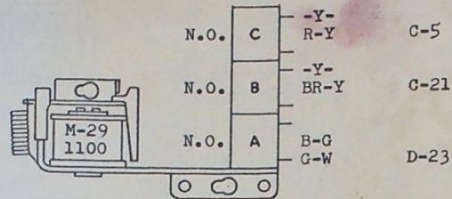
ENERGIZES DOWN POST COIL.

PULSES 100 POINT RELAY.

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

NO. 1 BUMPER RELAY

IS ENERGIZED BY RIGHT BOTTOM JET BUMPER SWITCH.



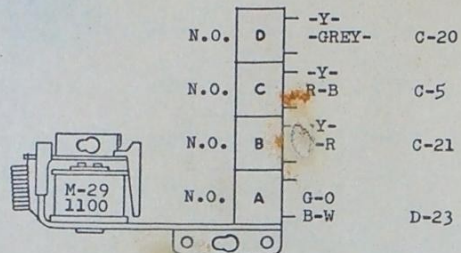
PULSES RIGHT BOTTOM JET BUMPER COIL.

IN SERIES WITH SWITCH C ON "ON YELLOW" RELAY.

IN HOLD CIRCUIT TO THIS RELAY.

NO. 2 BUMPER RELAY

IS ENERGIZED BY CENTER JET BUMPER SWITCH.



ENERGIZES ADVANCE UNIT S.U. COIL.

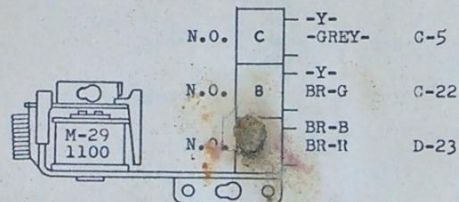
PULSES CENTER JET BUMPER COIL.

PULSES 100 POINT RELAY.

IN HOLD CIRCUIT TO THIS RELAY.

NO. 3 BUMPER RELAY

IS ENERGIZED BY RIGHT TOP JET BUMPER SWITCH.



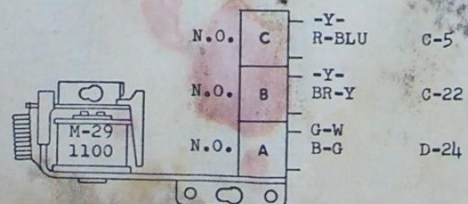
PULSE RIGHT TOP JET BUMPER COIL.

IN SERIES WITH SWITCH C ON "ON GREEN" RELAY.

IN HOLD CIRCUIT TO THIS RELAY.

NO. 4 BUMPER RELAY

IS ENERGIZED BY LEFT TOP JET BUMPER SWITCH.



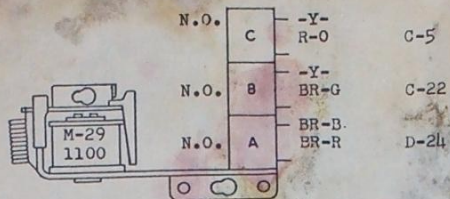
PULSES LEFT TOP JET BUMPER COIL.

IN SERIES WITH SWITCH C ON "ON YELLOW" RELAY.

IN HOLD CIRCUIT TO THIS RELAY.

NO. 5 BUMPER RELAY

IS ENERGIZED BY LEFT BOTTOM JET BUMPER SWITCH.



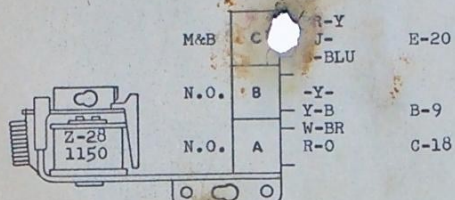
PULSES LEFT BOTTOM JET BUMPER COIL.

IN SERIES WITH SWITCH C ON "ON GREEN" RELAY.

IN HOLD CIRCUIT TO THIS RELAY.

LEFT GATE RELAY

IS ENERGIZED BY WIPER ON ADVANCE UNIT DISC, THRU SWITCH E ON EJECT RELAY.



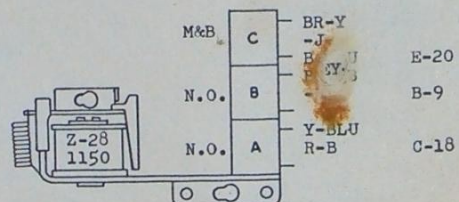
OPENS IN CIRCUIT TO 1000 POINT RELAY AND CLOSSES TO 5000 POINT RELAY.

TO LEFT GATE LITE.

IN HOLD CIRCUIT TO THIS RELAY.

RIGHT BOTTOM GATE RELAY

IS ENERGIZED BY WIPER ON ADVANCE UNIT DISC, THRU SWITCH E ON EJECT RELAY.



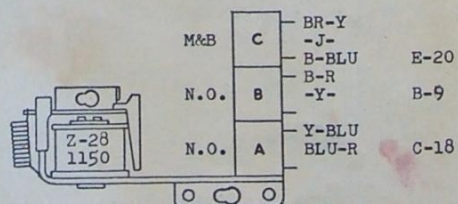
OPENS IN CIRCUIT TO 1000 POINT RELAY AND CLOSSES TO 5000 POINT RELAY.

TO RIGHT BOTTOM GATE LITE.

HOLD CIRCUIT TO THIS RELAY, THRU TROUGH SWITCH.

RIGHT GATE RELAY

IS ENERGIZED BY WIPER ON ADVANCE UNIT DISC, THRU SWITCH E ON EJECT RELAY.



OPENS IN CIRCUIT TO 1000 POINT RELAY AND CLOSSES TO 5000 POINT RELAY.

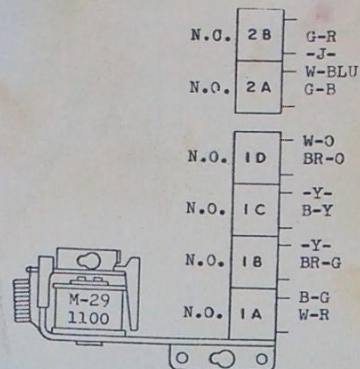
TO RIGHT GATE LITE.

HOLD CIRCUIT TO THIS RELAY, THRU TROUGH SWITCH.

LOCATED IN BACKBOX

10 POINT RELAY

IS PULSED BY KICKER SWITCHES, STANDUP SWITCHES, NO. 1, 3, 4 OR 5 BUMPER RELAYS.



IN SERIES WITH SWITCH F ON EJECT RELAY.

IN HOLD CIRCUIT TO THIS RELAY.

PULSES 10 POINT DRUM UNITS, THRU PLAYER UNIT DISC.

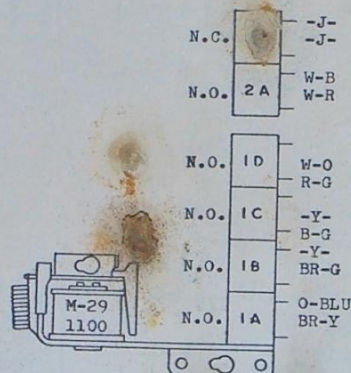
ENERGIZES NO. MATCH UNIT S.U. COIL.

IN SERIES WITH SWITCH C ON EXTRA BALL RELAY.

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

100 POINT RELAY

IS PULSED BY ADVANCE RELAY, POST RELAY, 500 RELAY, NO. 2 BUMPER RELAY AND BY NO. 1, 3, 4 OR 5 BUMPER RELAYS WHEN CORRESPONDING JET BUMPERS ARE LIT.



IN SERIES WITH SWITCH 2B ON 10 POINT RELAY.

IN HOLD CIRCUIT TO THIS RELAY.

PULSES 100 POINT DRUM UNITS, THRU PLAYER UNIT DISC.

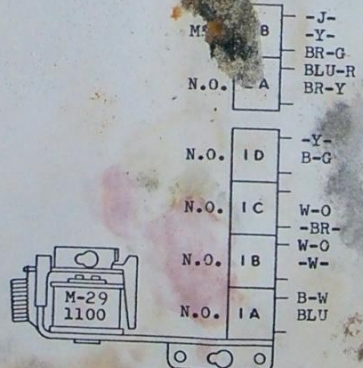
PULSES LARGE BELL COIL.

IN SERIES WITH SWITCH C ON EXTRA BALL RELAY.

PULSES 1000 POINT RELAY, THRU 9TH POSITION SWITCHES ON 100 POINT DRUM UNITS.

1000 POINT RELAY

IS PULSED BY 5000 RELAY; LEFT SIDE, RIGHT SIDE AND RIGHT BOTTOM ROLLOVER SWITCHES AS INDICATED ON PLAYFIELD-----AND WHEN COLLECTING BONUS, DOUBLE BONUS OR TRIPLE BONUS.



OPENS IN SERIES WITH SWITCH 2B ON 100 POINT RELAY, AND CLOSSES TO BALL INDEX RELAY.

IN HOLD CIRCUIT TO THIS RELAY.

PULSES LARGE BELL COIL.

PULSES 10,000 POINT DRUM UNITS, THRU 9TH POSITION SWITCHES ON 1000 POINT DRUM UNITS.

PULSES 1000 POINT DRUM UNITS, THRU PLAYER UNIT DISC.

IN HI-SCORE CIRCUIT TO REPLAY S.U. COIL.

1-2 RESET RELAY

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



3-4 RESET RELAY

IS PULSED BY 1ST IMPULSE CAM SWITCH A, THRU SWITCH A ON RESET RELAY.

