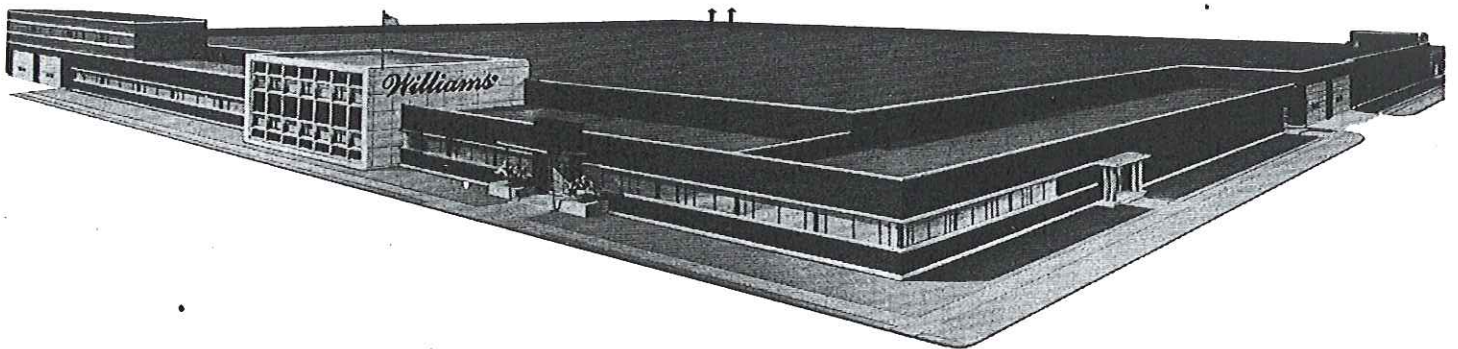


# Instruction Manual

*for*

## WILLIAMS

# “DERBY DAY”



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

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"DERBY DAY"  
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2 PLAYER NOVELTY GAME

BALL RESTS IN OSCILLATING UNIT WHICH HAS A POINTER ATTACHED TO IT. WHEN PLAYER DEPRESSES THE BUTTON ON TOP OF FRONT MOUNDING, THE BALL IS SKILLFULLY PROPELLED IN THE DIRECTION WHICH THE POINTER IS AIMED. BALL CAN BE KEPT IN PLAY BY MEANS OF FOUR FLIPPERS (TWO ON EACH SIDE) THAT ARE CONTROLLED BY FLIPPER BUTTONS ON THE OUTSIDE OF CABINET.

THE OBJECT OF THE GAME IS TO KEEP HITTING THE SEVEN BACK TARGETS LOCATED AT REAR OF GAME, AND THE TWO ROTATING TARGETS LOCATED AT LEFT AND RIGHT CENTER. THESE TARGETS, WHEN HIT, ADVANCE THE CORRESPONDING NUMBERED HORSES. THE ODD NUMBERED HORSES (1-3-5) AND THE EVEN NUMBERED HORSES (2-4-6) LITE ALTERNATELY, AND WHEN LIT, ADVANCE HORSES FURTHER THAN WHEN NOT LIT. CHANGE CONTACTS CAN BE HIT TO LITE DESIRED HORSES.

2 PLAYER GAME

1st PLAYER'S HORSES ARE 1-3-5 AND EACH ONE WILL SCORE 100 POINTS AFTER THAT HORSE HAS CROSSED THE FINISH LINE. HITTING THE LEFT STAR TARGET, AFTER ALL THREE HORSES HAVE CROSSED FINISH LINE, SCORES 1,000 POINTS OR SPECIAL.

2nd PLAYER'S HORSES ARE 2-4-6 AND EACH ONE WILL SCORE 100 POINTS AFTER THAT HORSE HAS CROSSED THE FINISH LINE. HITTING THE RIGHT STAR TARGET, AFTER ALL THREE HORSES HAVE CROSSED FINISH LINE, SCORES 1,000 POINTS OR SPECIAL.

1 PLAYER GAME

PLAYER HAS ALL SIX HORSES AND EACH ONE WILL SCORE 100 POINTS AFTER THAT HORSE HAS CROSSED FINISH LINE. HITTING THE LEFT STAR TARGET, AFTER THE 1-3 AND 5 HORSES HAVE FINISHED, SCORES 1,000 POINTS OR SPECIAL.

HITTING THE RIGHT STAR TARGET, AFTER THE 2-4 AND 6 HORSES HAVE FINISHED, SCORES 1,000 POINTS OR SPECIAL.

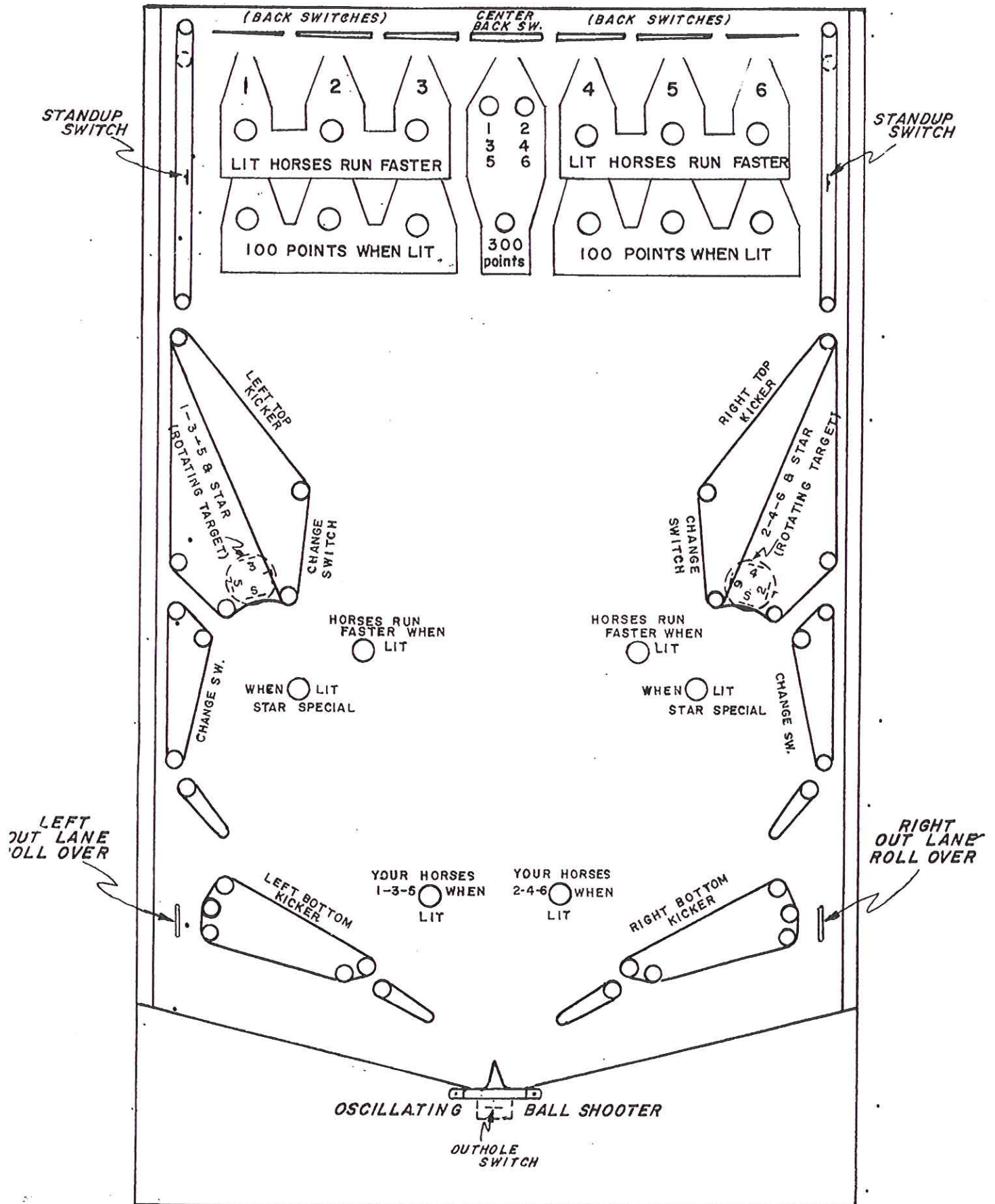
WHAT TO DO IF:

- A. Game resets properly except Game Over Relay trips immediately:
  - 1. Check Lock Relay.
  - 2. Check switch on Lock Relay Blu-Red and Yellow.
  - 3. Check Ball Count Unit reset.
- B. Lock Relay does not energize:
  - 1. Check switch A on Lock Relay.
  - 2. Check switch F on Coin Relay
  - 3. Check Cabinet Bottom Slam Switch-Blu and Yellow.

WHAT TO DO IF: DURING PLAY

- C. Ball Push Button is inoperative and Shooter Motor does not oscillate
  - 1. Check Outhole switch(made by ball).
  - 2. Check the Ball Rest Relay, which is energized by that Outhole switch.
  - 3. Check Switch A on Ball Rest Relay, which is in the circuit to energize the Outhole Relay.
  - 4. The Outhole Relay should run the Control Motor and pull in the Shooter Relay.
- D. Star Target is hit when Special Lite is lit but Replay Unit does not register:
  - 1. Check Replay Unit Last Position Break Switch.
  - 2. Check switch on Game Over Relay-Gray and Black-White.
  - 3. Check Replay-Novelty Adjustment Jack.
  - 4. Check Switches C and D on Score Transfer Relay.
  - 5. If Left Star Target was hit, check switches 9A, 13A, and 17A on the #5, #3 and #1 Finish Relays. Also check the Left Star Target switch and the Left Target Relay.
  - 6. If Right Star Target was hit, check switches 7A, 11A, and 15A on the #6, #4 and #2 Finish Relays. Also check the Right Star Target switch and the Right Target Relay.
  - 7. Check switch on Index Cam of Control Motor Brown-Yellow and Yellow.
- E. Any Scoring Drum that fails to operate:
  - 1. All scoring is controlled by the Player Relay switches and the 1, 10, or 100 Point Relays. If a 1-9 Drum Unit on either player fails, check switch D on the Player Relay and check the operation of the 1 Point Relay. Also check switch D on 1 Point Relay
  - 2. In regard to a 10-90 Drum Unit, check switch C on Player Relay. Also check switch D and operation of 10 Point Relay.
  - 3. 100-900 Drum Unit-check switch 1B and operation of 100 Point Relay.
  - 4. 1000-9000 Drum Unit-check switch A on Player Relay and 9th position switches on 1000-9000 Drum Units. Also check switch 1C and operation of 100 Point Relay.

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



"DERBY DAY"

HORSE RATE AND SCORE

Each horse is operated by its respective relay. No. 1 horse will advance when No. 1 relay is energized. No. 2 horse will advance when No. 2 relay is energized etc. The distance a horse will move is determined by the length of time the relay is kept energized by its own lock-in circuit through the selected scoremotor cam position. The horse advance rate is programmed differently for a one player and a two player game. The program can be varied by means of a "FAST ADVANCE" adjustment jack. This is accomplished by selecting different scoremotor cam positions to lengthen or decrease the length of time the relay is locked-in. The lit horses are determined by the position of the "ADVANCE" stepup unit.

The following table shows the various scoremotor cam positions used to control the horse rate advance and the score count while the horse is being advanced.

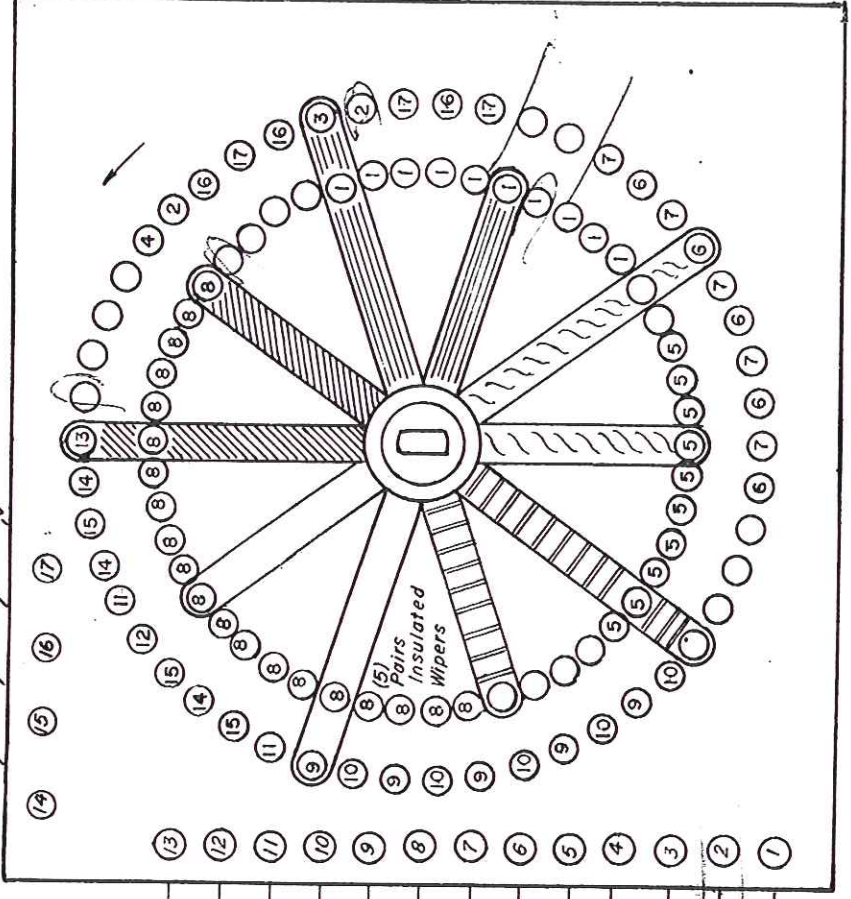
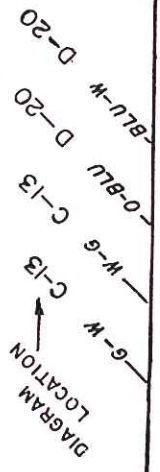
ADJUSTMENT JACK POSITION ↓	ONE PLAYER GAME		TWO PLAYER GAME	
	LIT HORSE	UNLIT HORSE	LIT HORSE	UNLIT HORSE
NORMAL	5th Position 50 Count	3rd Position 30 Count	4th Position 40 Count	2nd Position 20 Count
MEDIUM	5th Position 50 Count	3rd Position 30 Count	3rd Position 30 Count	2nd Position 20 Count
CONSERVATIVE	4th Position 40 Count	3rd Position 30 Count	3rd Position 30 Count	2nd Position 20 Count

# ADVANCE S. U. UNIT DISC

THIS IS A CONTINUOUS STEPPING UNIT. IT ADVANCES ONCE EVERY TIME THE ADVANCE RELAY IS PULSED.

View Looking at  
WIPER FINGER SIDE

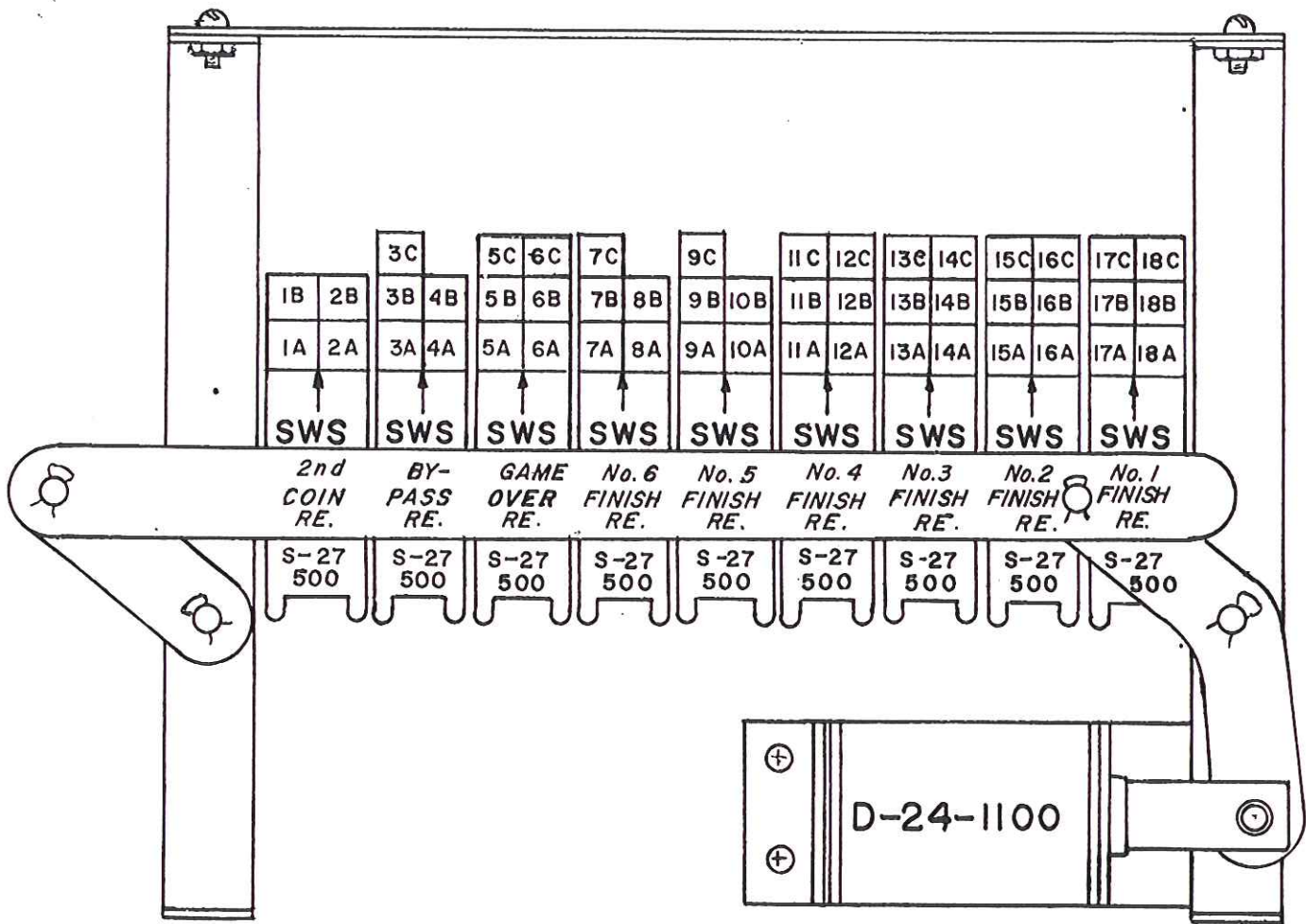
TO 1-3-5 CENTER LITES.	C-13	R-BR
TO 2-4-6 CENTER LITES	C-13	Y-BLU
TO 300 CENTER LITE.	C-13	Y-R
TO 2-4-6 ADVANTAGE LITES THRU #2 #4 #6 FINISH RELAYS.	C-12	R-B
TO 1-3-5 ADVANTAGE LITES THRU #1, #3 #5 FINISH RELAYS.	C-10	BLU-O
FEED TO ABOVE LITE CIRCUITS.	C-10 & C-13	Y
IN HOLD CIRCUIT TO #2, #4, #6 RELAYS.	D-25	W-BR
IN HOLD CIRCUIT TO #1, #3, #5 RELAYS.	D-24	W-BLU
FEED TO 6 AND 7 ABOVE.	D-24	G-B
ENERGIZES 2-4-6 RELAY THRU CENTER BACK SWITCH, LEFT OUT LANE OR RIGHT OUT LANE.	D-20	G-O
ENERGIZES 1-3-5 RELAY THRU CENTER BACK SWITCH, LEFT OUT LANE OR RIGHT OUT LANE.	D-19	GREY-BR
ENERGIZES 300 RELAY THRU CENTER BACK SWITCH, LEFT OUT LANE OR RIGHT OUT LANE.	D-20	R-Y
FEED TO 2,3, & 4 ABOVE.	D-19	Y-B



TO 2-4-6 CENTER LITE THRU 3-5 BALL ADJ. JACK  
ENERGIZES 1-3-5 RELAY FROM CENTER BACK SWITCH, LEFT OUT LANE OR RIGHT OUT LANE - THRU 3-5 BALL ADJ. JACK

TO 1-3-5 CENTER LITE THRU 3-5 BALL ADJ. JACK  
ENERGIZES 2-4-6 RELAY FROM CENTER BACK SWITCH, LEFT OUT LANE OR RIGHT OUT LANE - THRU 3-5 BALL ADJ. JACK





## RELAY BANK SW'S.

RELAY	SW.	WIRE COLORS	DIAGRAM LOCATION	TYPE	SWITCH OPERATION
<i>2nd COIN RELAY</i>	1A	Gray-W Yellow Y-G	C-7	M&B	"1 Can Play" and "2 Can Play" lites.
	1B	Br-Y G-R	E-6	N.C.	In circuit to Coin Re. thru Replay Button.
	2A	R-Y Br-B	E-17	N.O.	Energizes Score Transfer Relay thru Ball Count Unit disc.
	2B	R-Br Blu-Y	E-8	N.C.	In circuit to Ball Count Unit S.U. thru switch on Outhole Relay.
<i>BY-PASS RELAY</i>	3A	Gray-Br J O-B	D-23	M&B	Changes the distance that horses will advance thru Fast-Advance-Adj.
	3B	Br-Y Br-O W-R	F-28	M&B	Breaks circuit to 100 Pt. Relay and makes to 10 Pt. Relay
	3C	O-R W-Blu	E-25	N.C.	Shortens the distance that unlit horses will advance when two are playing.



## RELAY BANK SW'S.

RELAY	SW.	WIRE COLORS	DIAGRAM LOCATION	TYPE	SWITCH OPERATION
<i>BY-PASS RELAY</i>	4A	Blu-B Gray-R J	F-20	M&B	Breaks circuit to Replay Unit S.U. and make circuit to 2-4-6 Relay when Right Star Target is lite and hit.
	4B	Gray-Blu J	C-9	N.C.	In circuit to 100 lites located in front of 2, 4 & 6 Back-Targets.
<i>GAME OVER</i>	5A	Br-Y-W Br Gray-O	A-5	M&B	Breaks circuit to Ball in Play lites and completes circuit to Game Over lite.
	5B	J Y-B	E-6	N.O.	In circuit to Coin Relay thru Replay Button switch.
<i>RELAY</i>	5C	B R-Y-W	F-17	N.C.	Breaks circuit to all Scoring Relays.
	6A	Blu-W Br-R	E-9	N.O.	Energizes Start Relay thru switch on Coin Relay.
	6B	Gray B-W	F-13	N.C.	Breaks circuit to Replay S.U. Coil.
	6C	Blu-Y-W W	A-8	N.C.	Breaks circuit to all Playfield lites except Finish lites.
<i>#6 FINISH RELAY</i>	7A	G-O J Y-O	E-19	M&B	In circuit to 2-4-6 Relay or to Replay S.U. Coil.
	7B	W-Blu J	C-5	N.O.	To 6 Finish lite.
	7C	R-B Br-B	B-12	N.C.	To 6 Advantage lite.
	8A	Br-W W-G B-R	F-27	M&B	In circuit to #6 Relay & #6 Horse Release Coil or to 100 Pt. Relay & 10 Pt. Relay.
	8B	J G-W	C-10	N.O.	To 100 lite at 6 Back-Target. Also in series circuit to Right Special lite.
<i>#5 FINISH RELAY</i>	9A	Gray-Br J O-R	E-18	M&B	In circuit to 1-3-5 Relay or to Replay S.U. Coil.
	9B	W-B J	C-5	N.O.	To 5 Finish lite.
	9C	Blu-O Gray-O	B-11	N.C.	To 5 Advantage lite.

RELAY BANK SW'S.

RELAY	SW	WIRE COLORS	DIAGRAM LOCATION	TYPE	SWITCH OPERATION
#5 FINISH RELAY	10A	Br G J	F-24	M&B	In circuit to #5 Relay & #5 Horse Release Coil or to 100 Pt. Relay & 10 Pt. Relay.
	10B	Gray-G .B-Y	C-9	N.O.	To 100 lite at 5 Back-Target. Also in series circuit to Left Special lite.
#4  FINISH  RELAY	11A	J J J	E-19	M&B	In series with Switch 7A on #6 Finish Relay.
	11B	O-W J	C-4	N.O.	To 4 Finish lite.
	11C	J G-B	B-12	N.C.	To 4 Advantage lite.
	12A	Br-G G-W J	F-26	M&B	In circuit to #4 Relay & #4 Horse Release Coil or to 100 Pt. Relay & 10 Pt. Relay.
	12B	J J	B-10	N.O.	In series with Switch 8B on #6 Finish Relay.
	12C	O J	C-10	N.O.	To 100 lite at 4 Back-Target.
#3  FINISH  RELAY	13A	J J J	E-18	M&B	In series with Switch 9A on #5 Finish Relay.
	13B	O-G J	C-4	N.O.	To 3 Finish lite.
	13C	J Gray-Br	B-11	N.C.	To 3 Advantage lite.
	14A	W-Gray Y-Blu J	F-23	M&B	To #3 Relay & #3 Horse Release Coil or to 100 Pt. Relay & 10 Pt. Relay.
	14B	J J	B-9	N.O.	In series with Switch 10B on #5 Finish Relay.
	14C	Y-Br J	C-9	N.O.	To 100 lite at 3 Back-Target.
#2 FINISH RELAY	15A	J R-G J	E-19	M&B	In series with Switch 7A on #6 Finish Relay.
	15B	O-Blu J	C-4	N.O.	To 2 Finish lite.

RELAY BANK SW'S.

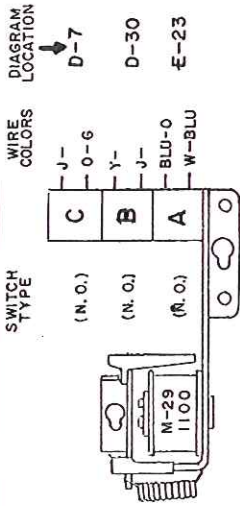
RELAY	SW	WIRE COLORS	DIAGRAM LOCATION	TYPE	SWITCH OPERATION
#2  <i>FINISH</i>  <i>RELAY</i>	15C	J Gray-R	B-12	N.C.	To 2 Advantage lite.
	16A	Br-Blu G-Y J	F-25	M&B	In circuit to #2 Relay & #2 Horse Release Coil or to 100 Pt. Relay & 10 Pt. Relay.
	16B	J R-Br	B-10	N.O.	In series with Switch 8B on #6 Finish Relay.
	16C	B-Blu J	C-10	N.O.	To 100 lite at 2 Back-Target.
#1  <i>FINISH</i>  <i>RELAY</i>	17A	J O-B J	E-18	M&B	In series with Switch 9A on #5 Finish Relay.
	17B	W-Gray J	C-4	N.O.	To 1 Finish lite.
	17C	J Y-B	B-11	N.C.	To 1 Advantage lite.
	18A	W-B Blu-O Blu	F-22	M&B	In circuit to #1 Relay & #1 Horse Release Coil or to 100 Pt. Relay & 10 Pt. Relay.
	18B	W-Br J	B-9	N.O.	In Series with Switch 10B on #5 Finish Relay.
	18C	Y-R J	C-8	N.O.	To 100 lite at 1 Back-Target.

# A.C. RELAYS & SWITCHES

## On Mechanism Panel

### #1 RELAY

IS ENERGIZED BY THE #1 BACK SWITCH, THE 1-3-5 RELAY OR #1 TARGET (ROTATING) SWITCH.



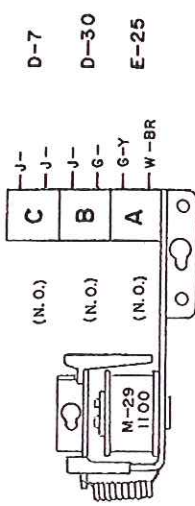
RUNS CONTROL MOTOR

RUNS HORSE ADVANCE MOTOR & PULSES 10 FT. RELAY THRU IMPULSE CAM SW.  
HOLD CIRCUIT TO THIS RELAY & #1 HORSE RELEASE COIL

### OPERATION

### #2 RELAY

IS ENERGIZED BY THE #2 BACK SWITCH, THE 2-4-6 RELAY OR #2 TARGET (ROTATING) SWITCH.

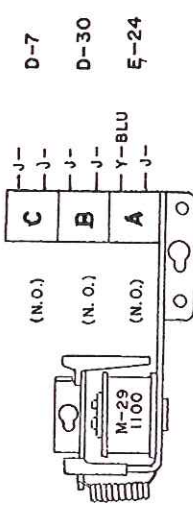


RUNS CONTROL MOTOR

SAME AS SWITCH 'B' ON #1 RELAY  
HOLD CIRCUIT TO THIS RELAY & #2 HORSE RELEASE COIL

### #3 RELAY

IS ENERGIZED BY THE #3 BACK SWITCH, THE 1-3-5 RELAY OR #3 TARGET (ROTATING) SWITCH.

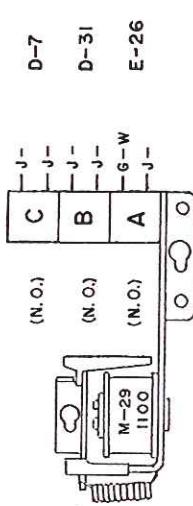


RUNS CONTROL MOTOR

SAME AS SWITCH 'B' ON #1 RELAY  
HOLD CIRCUIT TO THIS RELAY & #3 HORSE RELEASE COIL

### #4 RELAY

IS ENERGIZED BY THE #4 BACK SWITCH, THE 2-4-6 RELAY OR #4 TARGET (ROTATING) SWITCH.

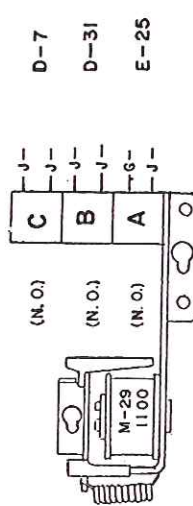


RUNS CONTROL MOTOR

SAME AS SWITCH 'B' ON #1 RELAY  
HOLD CIRCUIT TO THIS RELAY & #4 HORSE RELEASE COIL

### #5 RELAY

IS ENERGIZED BY THE #5 BACK SWITCH, THE 1-3-5 RELAY OR #5 TARGET (ROTATING) SWITCH.

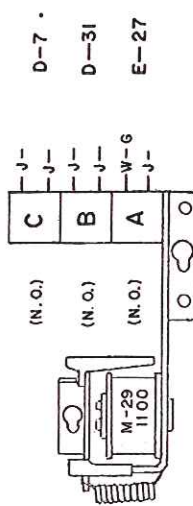


RUNS CONTROL MOTOR

SAME AS SWITCH 'B' ON #1 RELAY  
HOLD CIRCUIT TO THIS RELAY & #5 HORSE RELEASE COIL

### #6 RELAY

IS ENERGIZED BY THE #6 BACK SWITCH, THE 2-4-6 RELAY OR #6 TARGET (ROTATING) SWITCH.



RUNS CONTROL MOTOR

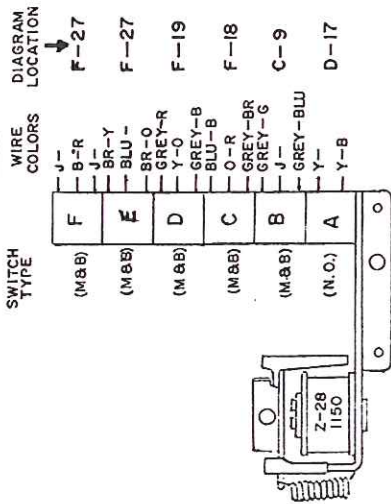
SAME AS SWITCH 'B' ON #1 RELAY  
HOLD CIRCUIT TO THIS RELAY & #6 HORSE RELEASE COIL

# A.C. RELAYS & SWITCHES

## On Mechanism Panel

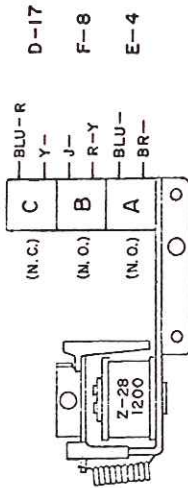
### SCORE TRANSFER RELAY

IS ENERGIZED BY A SWITCH ON THE 2ND COIN RELAY THRU THE BALL COUNT UNIT DISC.



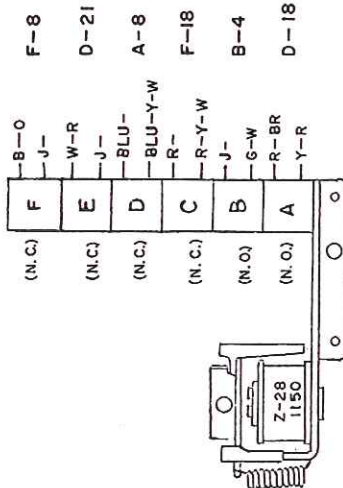
### LOCK RELAY

IS ENERGIZED BY A SWITCH ON THE COIN RELAY THRU THE CABINET BOTTOM SLAM SWITCH.



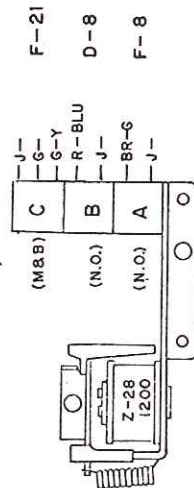
### TILT RELAY

IS ENERGIZED BY THE PUMP BOB TILT, BALL TILT, OR SLAM TILT, THRU SWITCH B ON BALL REST RELAY. ALSO BY SWITCH F ON START RELAY.



### SHOOTER RELAY

IS ENERGIZED BY EITHER THE OUTHOLE RELAY OR START RELAY THRU SWITCH ON 3RD CAM OF CONTROL MOTOR.



### OPERATION

IN CIRCUIT TO 10 FT. RELAY OR 100 FT. RELAY THRU #2, #4 OR #6 FINISH RELAY

IN CIRCUIT TO 10 FT. RELAY OR 100 FT. RELAY THRU #1, #3 OR #5 FINISH RELAY SWITCHES

ENERGIZES REPLAY S.U. OR 2-4-6 RELAY WHEN RIGHT STAR TARGET IS LIT AND HIT

ENERGIZES REPLAY S.U. OR 1-3-5 RELAY WHEN LEFT STAR TARGET IS LIT AND HIT

LITES "YOUR HORSES 1-3-5" OR "2-4-6" ALSO THE 100 LITES IN FRONT OF BACK TARGETS.

ENERGIZES PLAYER RELAY

TRIPS GAME OVER RELAY

IN HOLD CIRCUIT TO SHOOTER RELAY

HOLD CIRCUIT TO THIS RELAY

IN SERIES WITH SWITCH 'B' ON LOCK RELAY.

BREAKS CIRCUIT TO LEFT AND RIGHT TARGET RELAYS

BREAKS CIRCUIT TO PLAYFIELD LITES

BREAKS CIRCUITS TO ALL PLAYFIELD SWITCHES AND FLIPPER COILS.

TO "TILT" LITE

HOLD CIRCUIT TO THIS RELAY THRU SWITCH ON BALL REST RELAY.

IN CIRCUIT TO OUTHOLE RELAY OR BALL RELEASE COIL THRU SWITCH OF BALL REST RELAY

RUNS SHOOTER MOTOR

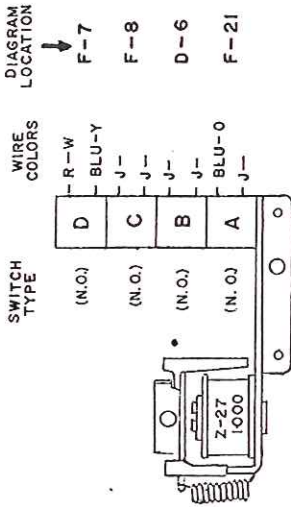
IN HOLD CIRCUIT TO THIS RELAY

# A.C. RELAYS & SWITCHES

## On Mechanism Panel

### OUTHOLE RELAY

IS ENERGIZED BY THE BALL REST RELAY THRU INDEX CAM SWITCH ON CONTROL MOTOR AND A SWITCH ON THE SHOOTER RELAY.

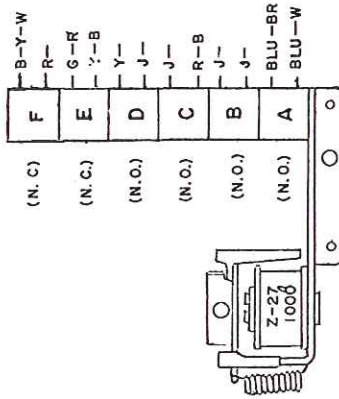


### OPERATION

PULSES BALL COUNT UNIT S.U. FROM SWITCH ON 1ST CAM OF CONTROL MOTOR.  
 ENERGIZES SHOOTER RELAY FROM SWITCH ON 3RD CAM OF CONTROL MOTOR  
 RUNS CONTROL MOTOR  
 HOLD CIRCUIT TO THIS RELAY THRU SWITCH ON CAM 5 CONTROL MOTOR

### START RELAY

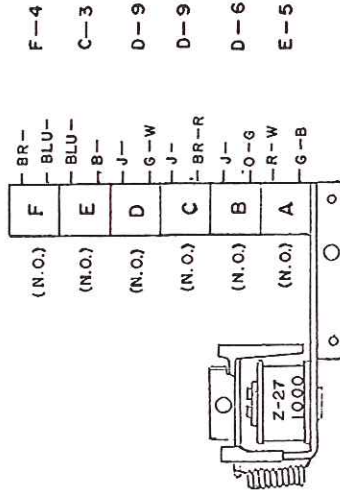
IS ENERGIZED BY COIN RELAY THRU EITHER THE BALL COUNT UNIT ZERO SWITCH OR GAME OVER RELAY SWITCH.



IN SERIES WITH SWITCH 'C' ON TILT RELAY.  
 IN CIRCUIT TO COIN RELAY THRU REPLAY BUTTON SW  
 ENERGIZES REPLAY BANK RESET COIL THRU 4TH CAM SWITCH CONTROL MOTOR.  
 SAME AS SWITCH 'C' ON OUTHOLE RELAY  
 RUNS CONTROL MOTOR  
 HOLD CIRCUIT TO THIS RELAY. ALSO RUNS HORSE RESET MOTOR.

### COIN RELAY

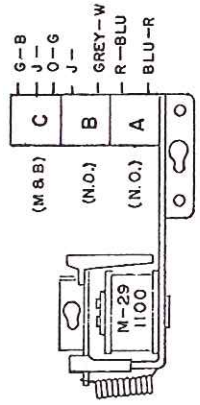
IS ENERGIZED BY THE COIN SWITCH THRU THE FRONT DOOR SLAM SWITCH.



ENERGIZES LOCK RELAY  
 IN SERIES WITH SWITCH 'D' ON START RELAY  
 TRIPS 2ND COIN RELAY & BY-PASS RELAY -ALSO ENERGIZES REPLAY UNIT RESET COIL THRU 1ST CAM SW. CONTROL MOTOR  
 ENERGIZES START RELAY  
 RUNS CONTROL MOTOR  
 HOLD CIRCUIT TO THIS RELAY

### 10¢ RELAY

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

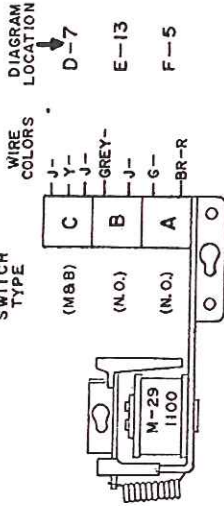


RUNS CONTROL MOTOR & BREAKS CIRCUIT TO KNOCKER COIL  
 ENERGIZES REPLAY UNIT STEP-UP THRU IMPULSE CAM SW.  
 HOLD CIRCUIT TO THIS RELAY

# A.C. RELAYS & SWITCHES

## On Mechanism Panel

### 25¢ RELAY



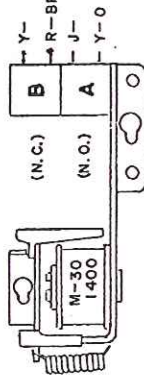
### OPERATION

RUNS CONTROL MOTOR & BREAKS CIRCUIT TO KNOCKER COIL  
 SAME AS SWITCH 'B' ON 10¢ RELAY  
 HOLD CIRCUIT TO THIS RELAY

IS ENERGIZED BY THE 25¢ COIN SWITCH THRU THE FRONT DOOR SLAM SWITCH.

## On Playfield

### BALL REST RELAY

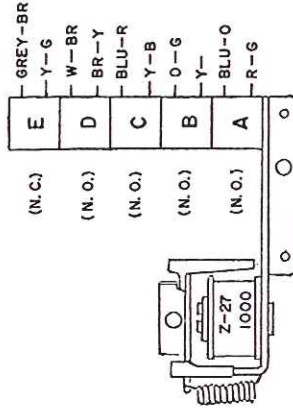


BREAKS CIRCUIT TO TILT RELAY

IS ENERGIZED BY THE OUTHOLE SWITCH (MAKES WITH BALL).

ENERGIZES OUTHOLE RELAY THRU SW. ON SHOOTER RELAY

### LEFT TARGET RELAY



BREAKS CIRCUIT TO RIGHT TARGET RELAY

ENERGIZES THE #1, 3 OR 5 RELAY WHEN #1, 3 OR 5 TARGET IS HIT

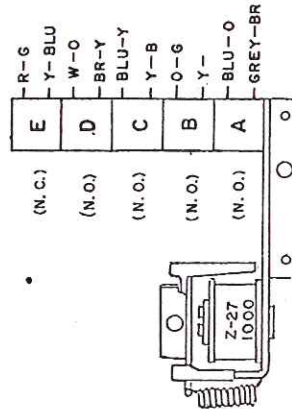
ENERGIZES LEFT TARGET ADVANCE COIL THRU 4TH CAM SW. CONTROL MOTOR

IS ENERGIZED BY LEFT TARGET SWITCH THRU SWITCH ON TILT RELAY.

RUNS CONTROL MOTOR

HOLD CIRCUIT TO THIS RELAY

### RIGHT TARGET RELAY



BREAKS CIRCUIT TO LEFT TARGET RELAY

ENERGIZES THE #2, 4 OR 6 RELAY WHEN #2, 4 OR 6 TARGET IS HIT

ENERGIZES RIGHT TARGET ADVANCE COIL THRU 4TH CAM SW. CONTROL MOTOR

IS ENERGIZED BY RIGHT TARGET SWITCH THRU SWITCH ON TILT RELAY.

RUNS CONTROL MOTOR

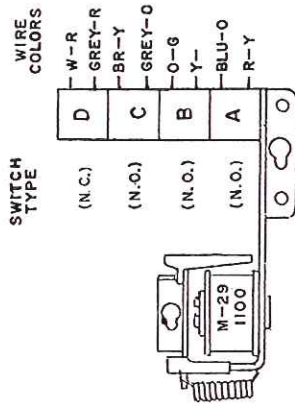
HOLD CIRCUIT TO THIS RELAY

# A. C. RELAYS & SWITCHES

## On Playfield

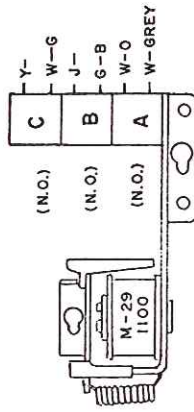
### 300 RELAY

IS ENERGIZED BY CENTER BACK SWITCH, LEFT OUT LANE, OR RIGHT OUT LANE THRU THE ADVANCE UNIT DISC.



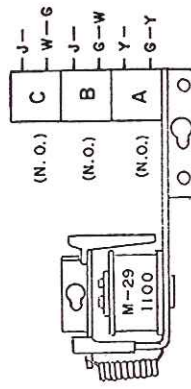
### ADVANCE RELAY

IS ENERGIZED BY ANY OF THE (L) CHANGE SWITCHES THRU INDEX CAM OF CONTROL MOTOR.



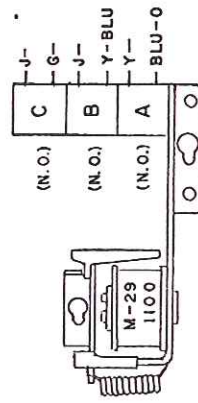
### 2-4-6 RELAY

IS ENERGIZED BY CENTER BACK SWITCH, LEFT OUT LANE, OR RIGHT OUT LANE THRU THE ADVANCE UNIT DISC.



### 1-3-5 RELAY

IS ENERGIZED BY CENTER BACK SWITCH, LEFT OUT LANE, OR RIGHT OUT LANE, THRU THE ADVANCE UNIT DISC.



### OPERATION

BREAKS CIRCUIT TO 10 PT. RELAY

PULSES 100 FT. RELAY THRU SW. ON 1ST, 2ND & 3RD CAM OF CONTROL MOTOR

RUNS CONTROL MOTOR

HOLD CIRCUIT TO THIS RELAY

ENERGIZES ADVANCE UNIT S.U. COIL

PULSES 1 PT. RELAY

HOLD CIRCUIT TO THIS RELAY THRU ADVANCE UNIT END OF STROKE SWITCH

ENERGIZES #6 RELAY & #6 HORSE RELEASE COIL THRU SWITCH ON #6 FINISH RELAY.

ENERGIZES #4 RELAY & #4 HORSE RELEASE COIL THRU SWITCH ON #4 FINISH RELAY.

ENERGIZES #2 RELAY & #2 HORSE RELEASE COIL THRU SWITCH ON #2 FINISH RELAY.

ENERGIZES #5 RELAY & #5 HORSE RELEASE COIL THRU SWITCH ON #5 FINISH RELAY.

ENERGIZES #3 RELAY & #3 HORSE RELEASE COIL THRU SWITCH ON #3 FINISH RELAY.

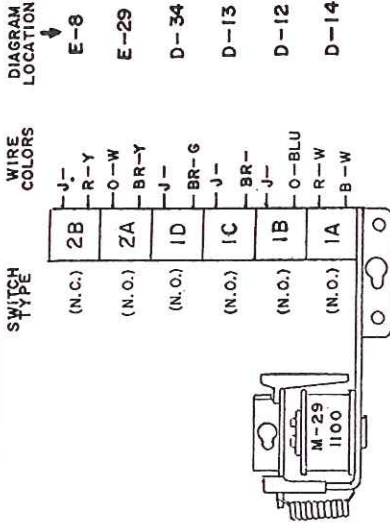
ENERGIZES #1 RELAY & #1 HORSE RELEASE COIL THRU SWITCH ON #1 FINISH RELAY.



# A. C. RELAYS & SWITCHES

On Insert

## 100 POINT RELAY

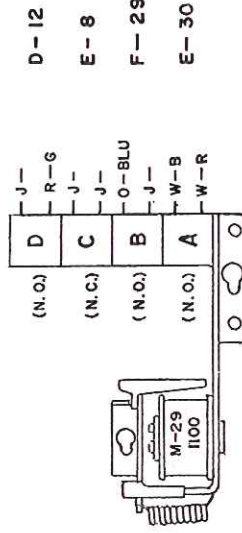


IS ENERGIZED BY THE 300 RELAY IS ENERGIZED, ALSO BY THE 10 POINT RELAY THRU THE 9TH POSITION SWITCH OF THE 1ST OR 2ND PLAYER 10-90 DRUM UNIT. ALSO BY THE SAME CIRCUITS THAT ENERGIZE THE #1 TO #6 RELAYS WHEN THAT PARTICULAR HORSE HAS CROSSED THE FINISH LINE.

## OPERATION

IN HOLD CIRCUIT TO SHOOTER RELAY  
 HOLD CIRCUIT TO THIS RELAY THRU 1ST & 2ND PLAYER 100-900 DRUM UNIT END-OF-STROKE SWITCH.  
 ENERGIZES BELL COIL  
 ENERGIZES 1ST OR 2ND PLAYER 1000-9000 DRUM UNIT THRU SWITCH ON PLAYER RELAY.  
 ENERGIZES 1ST OR 2ND PLAYER 100-900 DRUM UNIT THRU SWITCH ON PLAYER RELAY.  
 ENERGIZES REPLAY S.U. COIL IN HIGH SCORE CIRCUIT

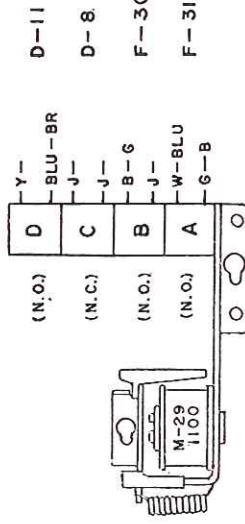
## 10 POINT RELAY



IS ENERGIZED BY THE IMPULSE CAM OF CONTROL MOTOR THRU A SWITCH ON #1 TO #6 RELAY. ALSO BY THE SAME CIRCUITS THAT ENERGIZE THE #1 TO #6 RELAYS WHEN THAT PARTICULAR HORSE HAS CROSSED THE FINISH LINE. ALSO BY THE 1 POINT RELAY THRU THE 9TH POSITION SWITCH ON 1ST OR 2ND PLAYER 1-9 DRUM UNIT.

ENERGIZES 1ST OR 2ND PLAYER 10-90 DRUM UNITS THRU SWITCH ON PLAYER RELAY  
 IN HOLD CIRCUIT TO SHOOTER RELAY  
 PULSES 100 PT. RELAY THRU 9TH POSITION SW. ON 1ST OR 2ND PLAYER 10-90 DRUM UNITS.  
 HOLD CIRCUIT TO THIS RELAY THRU END-OF-STROKE SW. ON 1ST & 2ND PLAYER 10-90 DRUM UNITS.

## 1 POINT RELAY



IS ENERGIZED BY THE FOLLOWING SWITCHES-(2) STANDUP, LEFT AND RIGHT TOP KICKER, AND LEFT AND RIGHT BOTTOM RUBBER KICKER. ALSO BY THE ADVANCE RELAY.

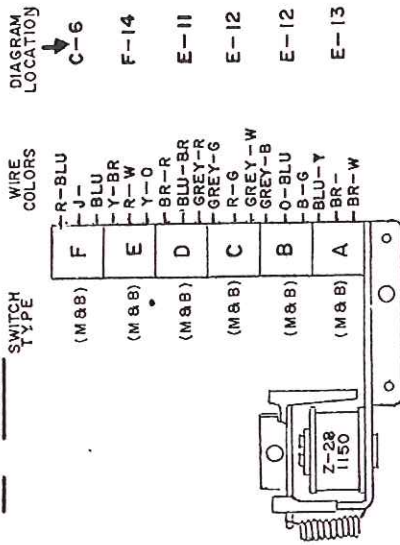
ENERGIZES 1ST OR 2ND PLAYER 1-9 DRUM UNIT THRU SWITCH ON PLAYER RELAY  
 IN HOLD CIRCUIT TO SHOOTER RELAY  
 PULSES 10 PT. RELAY THRU 9TH POSITION SW. ON 1ST OR 2ND PLAYER 1-9 DRUM UNIT.  
 HOLD CIRCUIT TO THIS RELAY THRU END-OF-STROKE SW. 1ST & 2ND PLAYER 1-9 DRUM UNITS.

# A. C. RELAYS & SWITCHES

On Insert

## PLAYER RELAY

IS ENERGIZED BY A SWITCH ON THE SCORE TRANSFER RELAY.



## OPERATION

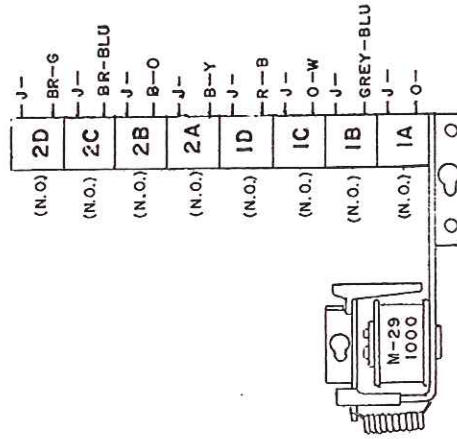
- TO 1ST & 2ND "PLAYER UP" LITES
- IN SERIES WITH SW. 1A ON 100 FT. RELAY. Y-O & Y-BR CONNECT TO THE 1000-9000 DRUM UNIT DISCS.
- IN SERIES WITH SWITCH D ON 1 FT. RELAY
- IN SERIES WITH SWITCH D ON 10 FT. RELAY
- IN SERIES WITH SWITCH 1B ON 100 FT. RELAY
- IN SERIES WITH SWITCH 1C ON 100 FT. RELAY

DIAGRAM LOCATION

- C-6
- F-14
- E-11
- E-12
- E-12
- E-13

## SCORE RESET RELAY

CONTINUES TO PULSE, BY A SWITCH ON THE IMPULSE CAM OF CONTROL MOTOR THRU A SWITCH ON THE START RELAY, UNTIL ALL THE SCORING DRUMS HAVE RESET TO ZERO AND ALL THE HORSES HAVE RETURNED TO THE STARTING LINE.

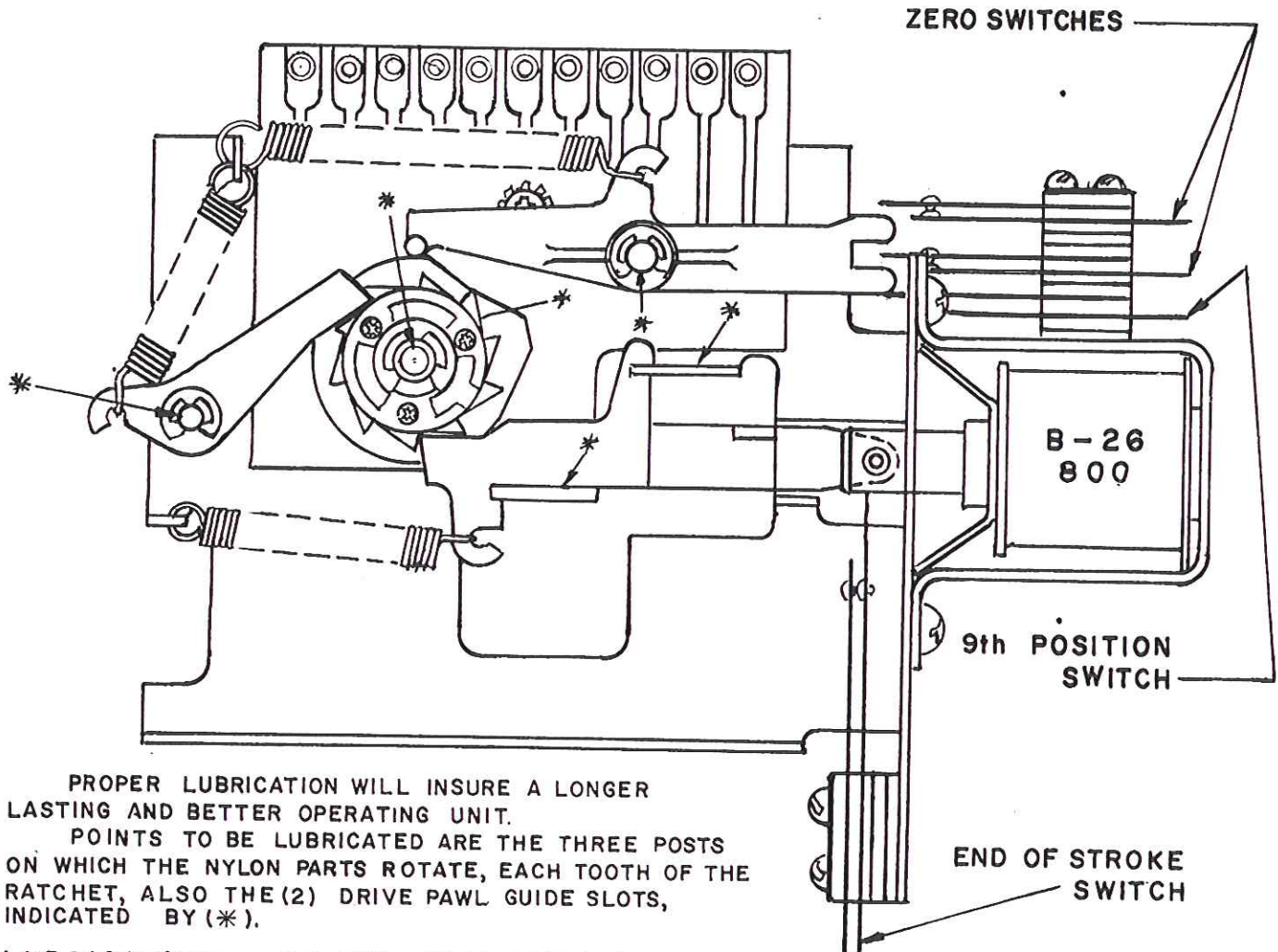


- PULSES 2ND PLAYER 1000-9000 DRUM UNIT THRU ZERO POS. SW. ON THAT UNIT
- PULSES 1ST PLAYER 1000-9000 DRUM UNIT THRU ZERO POS. SW. ON THAT UNIT
- PULSES 2ND PLAYER 100-900 DRUM UNIT THRU ZERO POS. SW. ON THAT UNIT
- PULSES 1ST PLAYER 100-900 DRUM UNIT THRU ZERO POS. SW. ON THAT UNIT
- PULSES 2ND PLAYER 10-90 DRUM UNIT THRU ZERO POS. SW. ON THAT UNIT
- PULSES 1ST PLAYER 10-90 DRUM UNIT THRU ZERO POS. SW. ON THAT UNIT
- PULSES 2ND PLAYER 1-9 DRUM UNIT THRU ZERO POS. SW. ON THAT UNIT
- PULSES 1ST PLAYER 1-9 DRUM UNIT THRU ZERO POS. SW. ON THAT UNIT

- E-13
- E-12
- E-11

# 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.

