

#823 - MINI-ZAG

INSTALLATION & GENERAL OPERATION INSTRUCTIONS

INSTALLATION

BEFORE LINE CORD IS PLUGGED IN:

Check all plugs and sockets and dress cables:

- (A) Plugs in correct sockets.
- (B) Plugs securely seated in sockets.
- (C) Dress cables away from relays.

Check adjustment of the three (normally open) tilt switches:

- (A) Panel tilt on bottom of playfield panel.
- (B) Plumb-bob tilt on left side of cabinet near front door.
- (C) Ball tilt above plumb-bob tilt.

Insert one of the two balls into ball tilt assembly and adjust bracket so ball will roll over switch blade if front of cabinet is raised.

PLUG IN LINE CORD:

Check adjustment of the four (normally closed) anti-cheat switches that hold-in anti-cheat relay:

- (A) On front door.
- (B) On mounting board, next to alternator unit.
- (C) On mounting board, next to name unit.
- (D) On mounting board, next to name unit.

Adjust switches so long blade is not touching actuating pin.

NOTE: Adjustment of above switches should be checked after game is plugged in. If not properly adjusted the anti-cheat relay will drop out during normal playing of game.

SEQUENCE OF OPERATION

Set-up prior to starting game:

Place ball into playfield by out hole.

Plug game in:

No lites lit.

Insert Coin or (if replays on register) Push Replay Button:

1. Start Relay (Trip) Coil is energized thru one of the coin chute relays or thru replay button and:
 - (A) Anti-Cheat Relay is energized and locked in thru anti-cheat and bounce switches, playfield and back box (general illumination) lites lite.
 - (B) Energizes the Reset Relay which operates the Score Motor and Resets All Point Score Units to zero.
 - (C) Thru #3 score motor cam switch. Resets replay unit one step, if replay used. Advances total play meter. Resets ball count unit to sub-zero position.

- (D) Thru #6 score motor cam switch. Energizes game-over relay (latch) coil and turns off game over lite.
 - (E) Thru #7 score motor cam switch. Energizes start relay (latch) coil.
 - (F) Thru #10 score motor cam switch. Coin chute relay is de-energized.
2. Ball Return Relay is Energized by Ball In Out Hole and:
- (A) Runs score motor.
 - (B) Energizes ball return kicker solenoid thru #8 score motor cam switch, which kicks ball from out-hole into ball trough to close trough switch. Advances Ball Count Unit from sub-zero position. If ball is in shooter lane when game is reset, rebound gate switch advances ball count unit from sub-zero position.
3. Check that:
- (A) Tilt and game-over lites are off.
 - (B) All point score units at zero.
 - (C) 1st ball lite is ON.

BALLS IN PLAY OPERATION

SECTION 1 - Ball at out hole position:

1. Ball in out hole energizes the ball return relay when score motor is in index position and it remains energized thru its own switch and normally closed #10 score motor cam switch.
2. Ball return relay will operate the score motor and then operate ball return kicker solenoid thru #8 score motor cam switch.
3. Ball trough switch advances the ball count unit.
4. After the last ball is played, ball in out hole energizes the ball return relay, which in turn energizes the match relay. The match relay advances the replay unit thru score motor #4 cam switch if score is matched; and thru score motor #7 cam switch, energizes game over relay (trip) coil. The game is now inoperative.

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FEATURE INSTRUCTIONS

SPOT LITES FEATURE: (LITES ON BACK GLASS)

Resets only at start of each game.

Advances one step each time Groovy lites all lite.

Advances to A top of 9.

Spot lites scores Adjustable to give replays or
(with Add-A-Ball kit installed) added balls.

GROOVY FEATURE: (LITES ON PLAYFIELD)

Carry-over feature. Resets only when all lites lit.

Advances one step each time orange mushroom-bumper hit. Also
advances one step by each Zagger lane rollover button hit when lit.

ZAGGER LANE FEATURE: (ROLL-OVER BUTTON LITES ON PLAYFIELD)

Resets at start of each game, when ball goes in either #1 or #2
Wayout hole, or when game is tilted.

Advances one step each time orange mushroom-bumper is hit
and lites Zagger lane roll-over buttons.

Zagger lane ball kicks only when ball goes in either #1 or #2
Wayout hole, with one or more Zagger lane rollover button lit.

TOP CENTER LANE ROLLOVER BUTTON:

Ball hitting either left or right top rebound, lites 100 lite
and rollover button scores 100 when hit.

Ball hitting both left and right top rebound, lites
200 lite and rollover button scores 200 when hit.

Ball not hitting either top rebound, rollover button scores 10
when hit and lites left and lower thumper-bumper, which score
10 when hit.

LOWER CENTER ROLLOVER BUTTON:

When hit, roll-over button lites left and lower thumper-bumper
which score 10 when hit. Also lites free ball rollover button,
which opens free ball gate when hit. Thumper-bumper lites and
free ball rollover lites go off, when ball returns to out hole.

FLIPPER ZIPPER FEATURE:

Flippers close when white mushroom bumper is hit. Flippers open
when any of the (3) orange mushroom-bumpers are hit, when ball
goes in either #1 or #2 Wayout hole, when ball returns to
out-hole, or when game is tilted.

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GAME ADJUSTMENTS

PLAYFIELD PANEL POST ADJUSTMENTS:

The playfield panel has several posts that can be moved at operators discretion to increase and decrease games scoring potential. A card showing liberal and conservative positions of these posts will be found in game.

BELL ADJUSTMENT PLUG:

Located on back box insert. This plug provides positions to ring bell for 10 point scores, 100 point scores, or both 10 and 100 point scores.

HI-SCORE ADJUSTMENT PLUGS:

Located on back box insert. These (2) plugs combine to provide a wide range of coverage at which replays or added balls* can be awarded for hi-scores. Recommended plug settings corresponding to score cards shipped with game will be found on hi-score adjustment chart inside back door of game.

SPOT LITES FEATURE ADJUSTMENT PLUG:

Located on mounting board. This plug provides positions to award replays or added balls* for Spot Lites feature scoring.

HI-SCORE FEATURE ADJUSTMENT PLUG:

Located on mounting board. This plug provides positions to award replays or added balls* for pre-set hi-scores.

SPOT LITES SCORE ADJUSTMENT PLUG:

Located on mounting board. This plug provides positions at which replays or added balls* can be awarded for Spot Lites feature scoring.

BALLS PER GAME ADJUSTMENT PLUG:

Located on mounting board. This plug provides positions for 7 ball, 5 ball, or 3 ball operation.

MATCH FEATURE ADJUSTMENT PLUG:

Located on mounting board. This plug provides positions to operate game with or without match feature.

BALL OR GAME TILT ADJUSTMENT PLUG:

Located on mounting board. This plug provides positions to penalize player ball in play or complete game when game is tilted.

2nd & 3rd COIN CHUTE ADJUSTMENT PLUG:

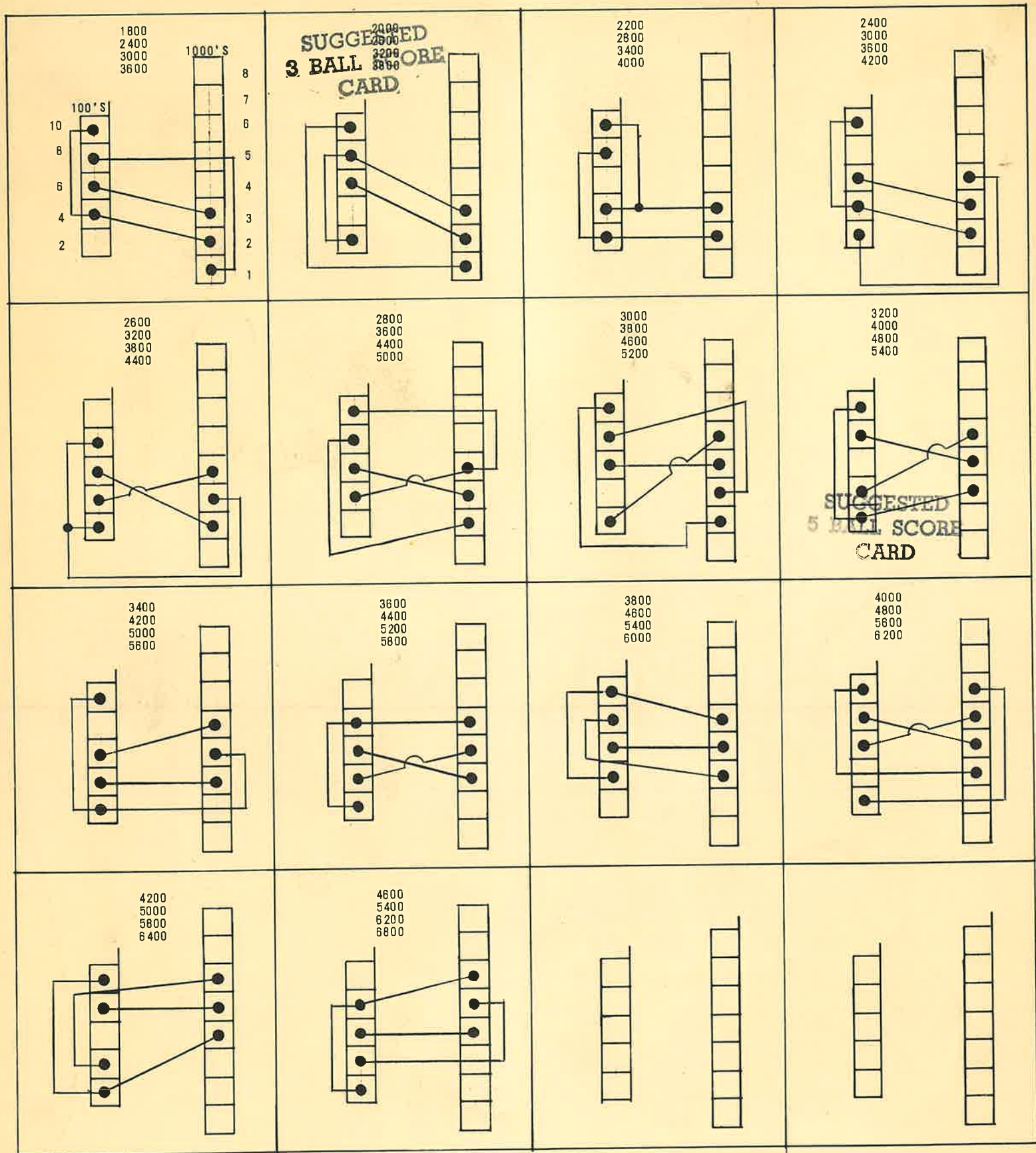
Located on mounting board. This plug provides positions to give 2 to 6 plays per coin thru 2nd and 3rd coin chutes.

1st COIN CHUTE ADJUSTMENT PLUG:

Located on the alternator unit, on mounting board. This plug provides positions to give 1 play per coin or 1 play per 2 coins thru 1st coin chute.

*When Add-A-Ball conversion kit (K-313-6) is used.

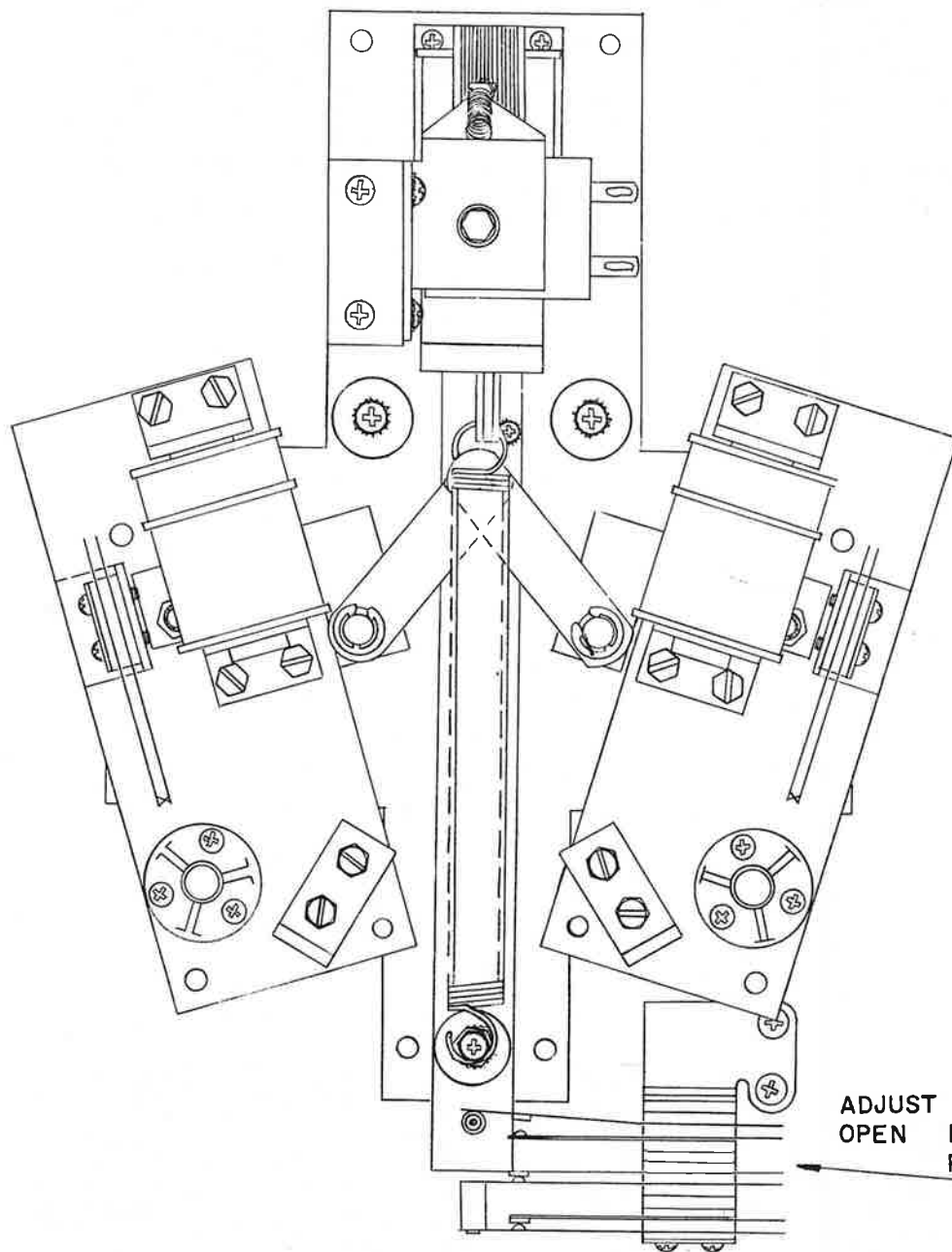
"MINI ZAG" - MODEL #823 - HIGH SCORE ADJUSTMENT CHART



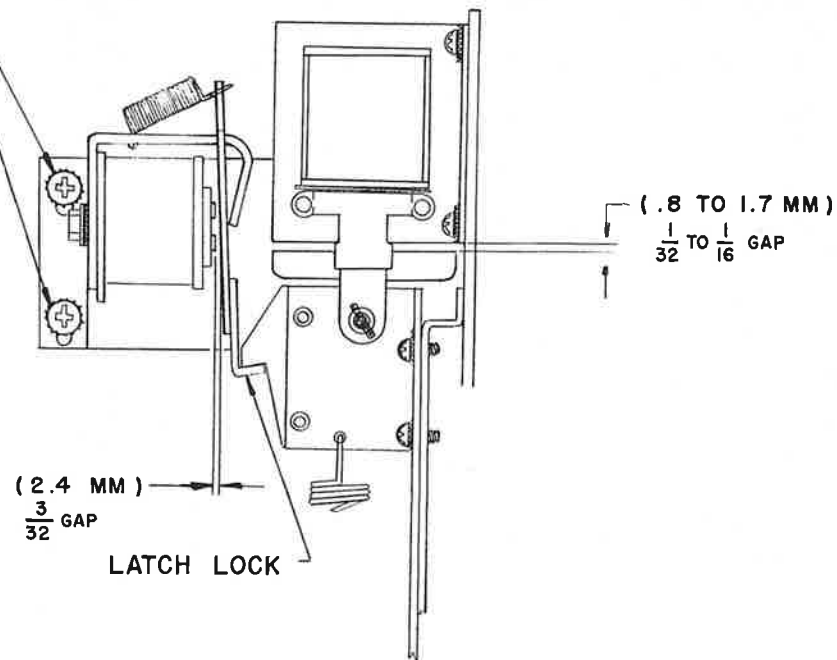
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PARTS LIST

	<u>PART NO.</u>		<u>PART NO.</u>
<u>MISCELLANEOUS:</u>		<u>UNIT COILS:</u>	
Transformer	E-122-95	Ball Count (Step-Up)	E-184-205
Score Motor	E-119-354	Ball Count (Reset)	CO-28-R-15
<u>KK RELAY COILS:</u>		Replay (Step-Up)	CO-26-GG-9
Ball Count	C-7800-3312	Replay (Reset)	CO-28-R-15
Yellow Mushroom Bumper	C-7800-3316	0-9 Match	E-184-205
White Mushroom Bumper	C-7800-3316	1-9 Score	E-184-206
50 Point	C-7800-331	10-90 Score	E-184-206
Zagger Lane	C-7800-3316	100-900 Score	E-184-206
Close Flipper	C-7800-3312	1000-9000 Score	E-184-206
Match	C-7800-334	Alternator	E-184-206
Ball Return	C-7800-331	Groovy (Step-Up)	CO-26-GG-9
Hold	C-7800-332	Groovy (Reset)	CO-28-R-15
Groovy	C-7800-3316	Spot Lites (Step-Up)	CO-26-GG-9
Feature	C-7800-341	Spot Lites (Reset)	CO-28-R-15
Anti-Cheat	C-7800-3312	Zagger (Step-Up)	CO-26-GG-9
3rd Coin Chute	C-7800-331	Zagger (Reset)	CO-28-R-15
2nd Coin Chute	C-7800-331		
1st Coin Chute	C-7800-331	<u>UNIT CONTACT DISC'S:</u>	
Reset	C-7800-331	Ball Count	W-1043-9
100 Point	C-7800-333	0-9 Match	W-1034-9
10 Point	C-7800-333	Groovy	W-1077-2
1 Point	C-7800-333	Spot Lites	W-1072-8
Free Ball	C-7800-341	Zagger	W-1088-1
Advance	C-7800-331	1-9 Score	A-2212-7
Orange Mushroom Bumper	C-7800-3316	100-900 Score	A-2212-7
Start (Trip)	C-7800-334	1000-9000 Score	A-2212-7
Start (Latch)	C-7800-331		
Game Over (Trip)	C-7800-334	<u>UNIT WIPER ASSEMBLIES:</u>	
Game Over (Latch)	C-7800-331	Ball Count	AS-1046-552
Top Center Lane	C-7800-3316	0-9 Match	AS-1046-501
Wayout #1	C-7800-331	1-9 Score	A-1618-3
Wayout #2	C-7800-331	100-900 Score	A-1618-3
Left Thumper Bumper	C-7800-334	1000-9000 Score	A-1618-3
Lower Thumper Bumper	C-7800-334	Groovy	AS-1046-504
Right Thumper Bumper	C-7800-334	Spot Lite	AS-1046-525
Left Rebound	C-7800-341	Zagger	AS-1046-535
Right Rebound	C-7800-341		
Add-A-Ball (W/K-313-6)	C-7800-336		
Hole Kicker	C-7800-332		
<u>ASSEMBLY COILS:</u>			
Open Flippers	C-2794-305		
Close Flippers	E-184-239		
Left Flipper	E-184-190		
Right Flipper	E-184-190		
Left Thumper Bumper	E-184-241		
Lower Thumper Bumper	E-184-241		
Right Thumper Bumper	E-184-241		
Wayout #1 Hole Kicker	E-184-56		
Wayout #2 Hole Kicker	E-184-56		
Ball Return Kicker	CO-25-A-7		
Lower Left Slingshot	CO-25-A-7		
Upper Left Slingshot	CO-25-A-7		
Right Slingshot	CO-25-A-7		
Free Ball Gate	E-184-204		
Zagger Lane Kicker	E-184-235		
Sounder	CO-27-R-11		
Bell	CO-31-0-55		



ADJUSTMENT SCREWS
ON LATCH RELAY



EFFECTIVE ADJUSTMENTS ON MOVEABLE FLIPPER ASSEMBLY

ADJUST SWITCH TO
OPEN IN LATCHED
POSITION