

**DE DATA
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MAVERICK

THE MOVIE



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with all schematics & drawings.**

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780-5031-00

CPU JUMPER TABLE

Game	CPU* Ver.	ROM Position	Jumpers		Game	CPU* Ver.	ROM Position	Jumpers	
			Installed	Removed				Installed	Removed
01. Laser War	1	5C	J4 J6a J7a	J5 J6 J7b	14. Star Trek	3	5C	J5	J4
	2	5B, 5C	J4 J5a J6a	J5 J5b J6b	15. Hook	3	5C	J5	J4
02. Secret Service	2	5B, 5C	J4	J5	16. Lethal Weapon 3	3	5C	J5	J4
03. Torpedo Alley	2	5B, 5C	J4	J5	17. Star Wars	3	5C	J5	J4
04. Time Machine	2	5B, 5C	J4	J5	18. Rocky & Bullwinkle & Friends	3	5C	J5	J4
05. Playboy	2	5B, 5C	J4	J5	19. Jurassic Park	3	5C	J5	J4
06. ABC Monday Night Football	2	5B, 5C	J4	J5	20. Last Action Hero	3	5C	J5	J4
07. Robocop	2	5B, 5C	J4	J5	21. Tales from the Crypt	3	5C	J5	J4
08. Phantom of the Opera	2	5B, 5C	J4	J5	22. The Who's Tommy	3	5C	J5	J4
09. Back to the Future	3	5B, 5C	J4	J5	23. WWF Royal Rumble	3	5C	J5	J4
10. The Simpsons	3	5B, 5C	J4	J5	24. Guns N' Roses	3	5C	J5	J4
11. Checkpoint	3	5B, 5C	J4	J5	25. Maverick	3	5C	J5	J4
12. Teenage Mutant Ninja Turtles	3	5B, 5C	J4	J5					
13. Batman	3	5B, 5C	J4	J5					

Board Combinations with ROM at Location 5C (Game 1, Ver1) **Installed** J1b, J3, J4, J6a, J7a & J8 **Removed** J1a, J2, J5, J6 & J7b
 Bd. Combinations w/ ROM at Locations 5B, 5C (Game 1, ver2) **Installed** J1b, J3, J4, J5a, J6a, J7b & J8 **Removed** J1a, J2, J5, J5b, J6b, & J7a
 Bd. Combinations w/ ROM at Loc. 5B, 5C (Games 2-13, Ver2/3) **Installed** J1b, J3, J4, J5b, J6b, J7b & J8 **Removed** J1a, J2, J5, J5a, J6a & J7a
 Bd. Combinations with ROM at Loc. 5C (Games 14-25, ver3) **Installed** J1b, J3, J5, J5b, J6b, J7b & J8 **Removed** J1a, J2, J4, J5a, J6a & J7a
 * Version 1 has a 2K RAM which is a 24-pin IC in Position 5D; Version 2/3 have a 8K RAM which is a 28-PIN IC in Position 5D.

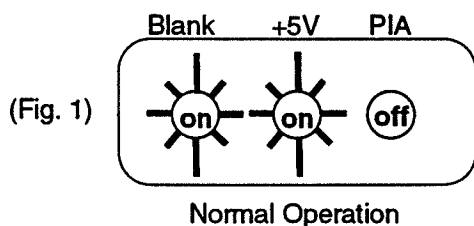
Board Compatibility (Reflexive & Non-Reflexive) of CPU Boards

Version 1 and 2—**Reflexive**—Solenoid Drive Transistor is enabled directly by a *switch closure* on the solenoid assembly.
 Version 3—**Non-Reflexive**—Solenoid Drive Transistor is enabled by the CPU after reading a *switch closure* in the Switch Matrix. All CPU Boards are *backwards compatible* (e.g. Jurassic Park / Ver. 3 to Time Machine / Ver. 2). Swapping a Version 2 Board to a Version 3 is not possible due to the special solenoids section (i.e. Slingshots, Turbo Bumpers, etc.) changing from **Reflexive** to **Non-Reflexive** on Version 3 Boards.

Power-Up CPU Self Tests

Upon power-up, the CPU Board performs a series of self tests of major components. Turn the game on while observing the LEDs on the CPU Board. Tests of the PIAs, RAM, and EPROMs are performed automatically and results of the tests are indicated by the PIA LED.

With all tests passed, the LEDs illuminate in the following sequence at power turn-on. The PIA and +5v LEDs illuminate immediately. Approximately 1/2-second later, the PIA LED goes out and the Blanking LED illuminates; the +5v and Blanking LEDs remain illuminated until the game is turned off. Test failures are indicated with the PIA LED:



PIA LED	SUSPECT COMPONENT
Stays On	One of the 6821 PIAs
Flashes 1 Time	6264 RAM at location D5
Flashes 2 Times	EPROM at location C5

DISPLAY READS "OPEN THE DOOR" -- This indicates a faulty memory condition in RAM. Opening the Coin Door will initiate a Factory Restore, by opening the Memory Protect Switch. Check battery voltage at CMOS RAM with power off.

QUICK REFERENCE FUSE CHART

PPB BOARD		POWER SUPPLY BOARD	
F1	5A Slo-Blo G.I. 6.3vAC	F1	7A Slo-Blo +5vDC Regulator Input (9vAC)
F2	5A Slo-Blo G.I. 6.3vAC	F2	7A Slo-Blo +5vDC Regulator Input (9vAC)
F3	5A Slo-Blo G.I. 6.3vAC	F3	Not Used
F4	5A Slo-Blo G.I. 6.3vAC	F4	8A Slo-Blo Switched Illumination Buss (18vDC)
F5	5A Slo-Blo Flipper Power & 50v coils	F5	4A Slo-Blo Solenoid (32vDC)...
F6	5A Slo-Blo Flash Lamps (32vDC) Right		Bumpers, Slingshots, etc.
F7	3A Slo-Blo Flipper Power & 32v coils Left	F6	5A Slo-Blo Solenoid Buss (32vDC)
F8	4A Slo-Blo 50v coils	F7	0.5A Slo-Blo Display Reg. Input (90vAC)
F9	5A Slo-Blo 50v coils		

MAVERICK

THE PINBALL

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GAME SPECIFICATIONS

POWER REQUIREMENTS

This game is provided with a 3-prong plug and **must be connected to a properly grounded outlet to reduce shock hazard** and insure proper game operation. Refer to AC Power Wiring Diagram for transformer connections required for normal, high, and low line conditions.

Normal Line:	109 to 129 -Volts AC (211 to 225 -Volts AC)
High Line:	(226 to 235 -Volts AC)-- European, International
Low Line:	95 to 108 -Volts AC (200 to 210 -Volts AC)

PROM SUMMARY

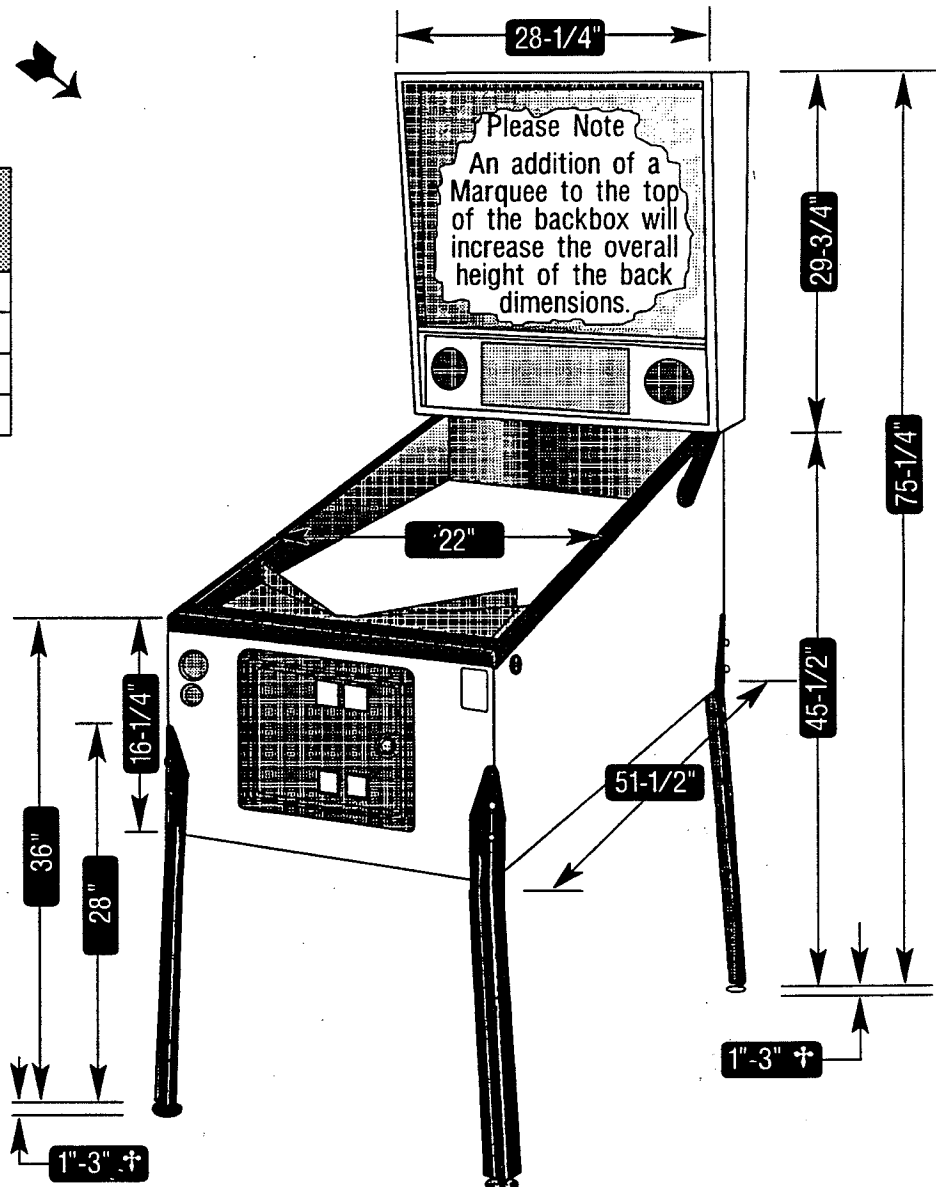
CPU Board:	Location C5
Sound Board:	Locations U17 (Voice ROM 1), U21 (Voice ROM 2), and U7 (Sound ROM)
Display Controller Board:	Location U1 (ROM 0) and U4 (ROM3)

TRANSPORTATION

To reduce the possibility of damage, observe the following precautions whenever transporting the game. Lower the backbox and secure it to the cabinet. Remove the legs and secure the game within the transporting vehicle.

OVERALL DIMENSIONS

Shipping Crate Dimensions	
Height	55-1/2"
Width	30-1/2"
Length	31"
Approx. Wt.	250 lbs.



† Note: The Leg Levellers can add up to 2 inches to the overall height of the front and back dimensions.

Game Assembly Procedures

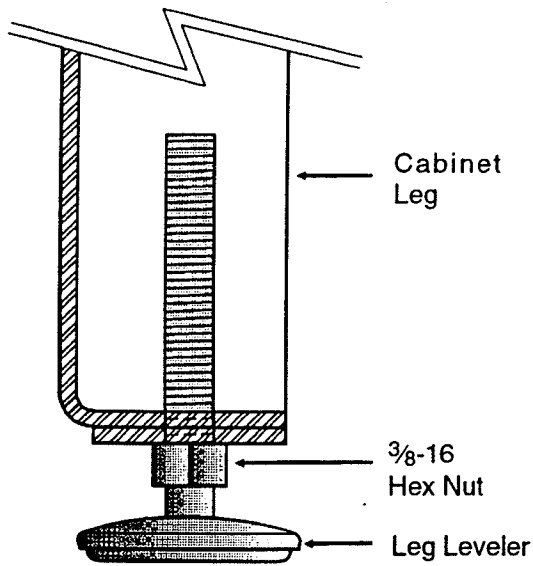
(Refer to the Illustrations on pages 3 & 4)

1. Open the top of the carton and lay it on its side with the bottom of the cabinet down. Using the plastic banding strip as a handle, slide the game out of the carton.
2. Remove all packing material. Cabinet legs are located on top of the front moulding above the coin door and the assembly parts package is in the cashbox. There should be four leg levelers, eight leg bolts, six pinballs and a large Allen Wrench, used for securing the backbox, is inserted & taped to the rear of cabinet.
3. Attach leg leveler from the parts package to each leg, make sure that each leveler is threaded through a hex nut before threading it into the leg.
4. Support rear of cabinet and attach rear legs using two leg bolts for each leg.
5. Support front of cabinet and attach front legs using two leg bolts for each leg.
6. While assuring that no cables are being pinched, carefully raise the backbox and secure it in its upright position with the Allen Wrench in the hole in the back of the cabinet and rotating the wrench 270 degrees(3/4 turn).
7. Remove the backbox keys from the playfield glass, unlock and carefully remove the backglass. Set the backglass aside.
8. Check all connectors in the backbox for loose wire terminations. Reseat any loose wire by pushing in on the terminal. Push on all connectors plugged into the CPU board, Sound Board, Power Supply Boards, and (on insert board) Display board to check that they are properly seated.
9. Check that the fuses on the Power Supply board, PPB board and fuse panel are seated properly.
10. Carefully remove the playfield glass and set it aside.
11. Raise the playfield and support it, by lifting the Stay Arm on the Right Side of the Cabinet and locking it into the slotted bracket on the playfield. (Use the instruction sheet provided in the game to see alternative methods of accessing the playfield bottom.)
12. Check all cabinet cable and playfield lamp board connector terminations.
13. Remove all shipping tie downs.
14. Remove the Plumb Bob tilt from the parts package and install on the pendulum wire on the inside left of the cabinet. (See Cabinet Parts Illustration.)
15. Lower the playfield and level the playfield side-to-side by adjusting leg levelers.
16. Using a level or slope indicator, adjust the pitch of the playfield to approximately 6.5 degrees.

THE PLAYFIELD INCLINE AFFECTS DIFFICULTY OF PLAY. USE THE RECOMMENDED INCLINE; GAME DIFFICULTY IS BEST VARIED USING GAME ADJUSTMENTS.

17. Check the plumb tilt and adjust as required.
18. If desired, perform any self tests at this time. With the insert door closed, carefully reinstall and lock the backglass.
19. Place the six pinballs on the playfield near the outhole and carefully reinstall the playfield glass.
20. If desired, make game pricing and Add-A-Ball, Novelty, or 5-Ball Play adjustments at this time.

**Please Note New Leg & Leveler
LEG LEVELER ADJUSTMENT**



STEP 1

Assemble all (4) legs and levelers as shown in the diagram. Be sure the leveler is turned all the way in.

STEP 2

Attach leg assemblies to cabinet with leg bolts provided.

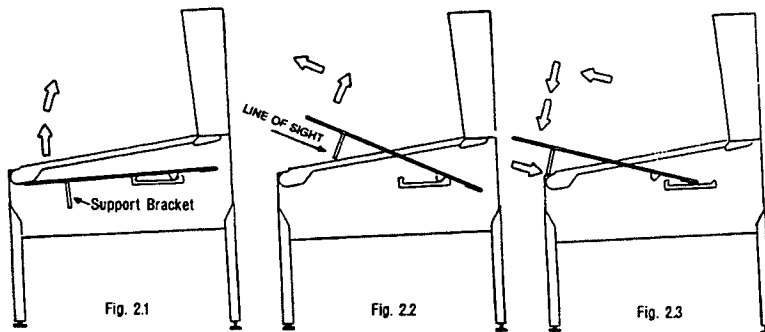
YOUR PLAYFIELD PITCH IS NOW AT 6.5° AS REQUIRED FOR PROPER GAME PLAY! See Step 3.

STEP 3

Verify 6.5° pitch. Minor adjustment(s) may be necessary depending on the location floor being level.

For custom adjustment greater than 6.5° can be achieved by turning out the leg leveler, however, it is not recommended.

EASY ACCESS SERVICE SYSTEM

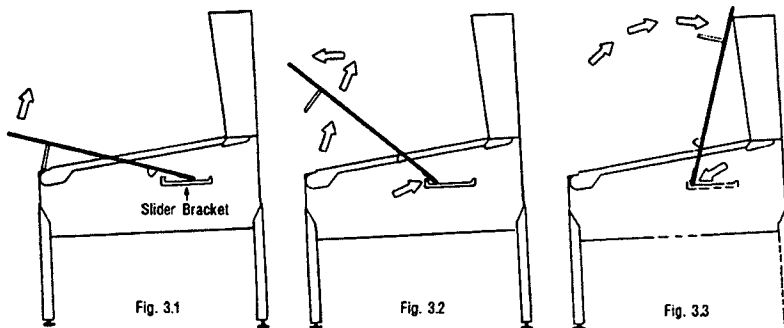


This position is useful to service:

Trough Switches, Connectors at back of cabinet, Cleaning the Playfield, etc.

SERVICE POSTION 1

Lift the playfield *using the left and right ball guides* upward (Fig. 2.1) until the playfield support brackets can be seen to clear cabinet front (Fig. 2.2). At this time, pull playfield toward the front of the cabinet, checking that the mechanical components clears the cabinet front (Fig. 2.3). Then rest the playfield on the support brackets at the front channel of cabinet. **Reverse procedure when service is complete.**



This position is useful to service:

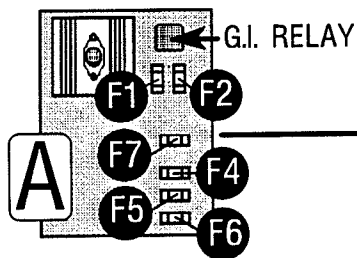
All Playfield Bottom Components, Cabinet Components, etc.

SERVICE POSTION 2

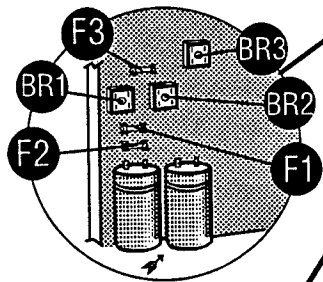
With the playfield at rest (Fig. 3.1), hold sides of playfield and pull toward the front of the cabinet (approximately 6-8"), until resistance is felt from the slider brackets located on either side of the cabinet (Fig. 3.2). At this time, swivel playfield toward the backbox, then rest on top edge of the backbox. **Reverse procedure when service is complete.**

BACKBOX LAYOUT, FUSE & RELAY LOCATIONS

PSB →
Power Supply Board

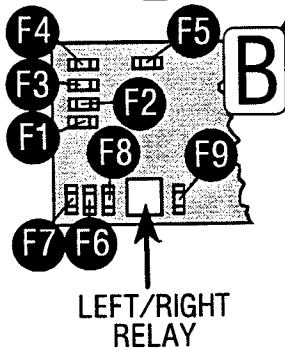


→
Backbox Bridges

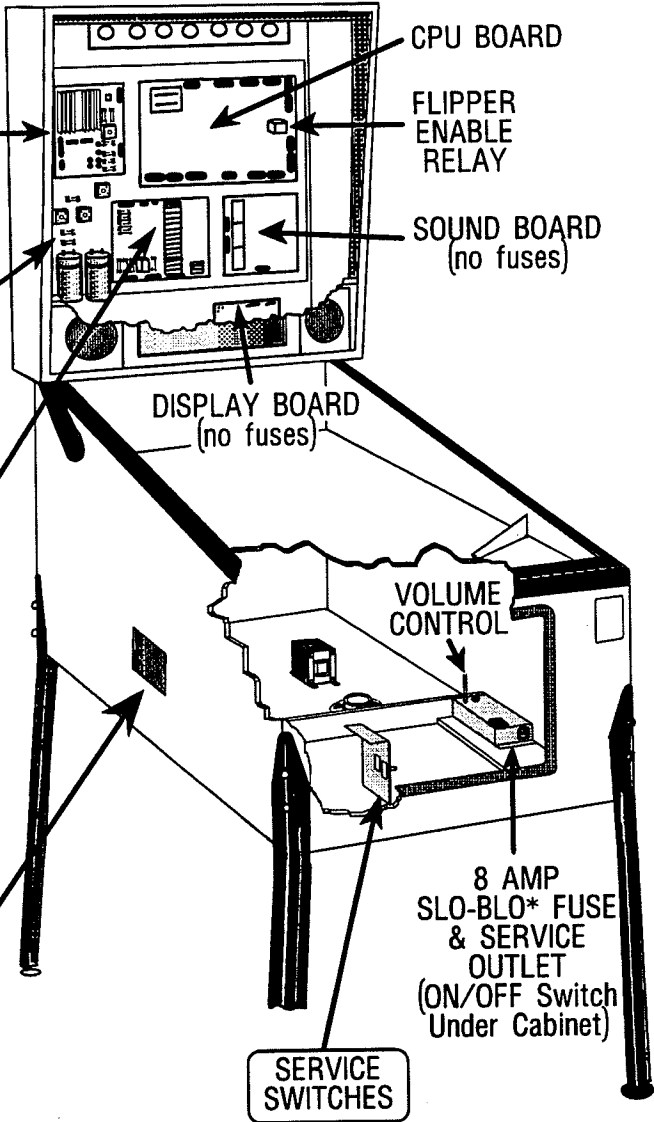
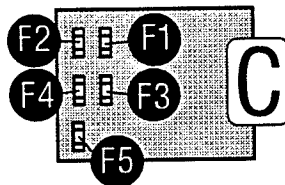


Filter Capacitors

PPB →
Playfield Power Board



SSFB →
Solid State Flipper Board



Note: Backbox Part Numbers on Page 38.

A: In the Backbox	B: In the Backbox	C: In the Cabinet	In the Backbox
Power Supply Board PSB	Playfield Power Board PPB	Solid State 3-Flipper Bd. SSFB	Backbox Bridges Mounted in Backbox
F1 7A Slo-Blo +5vDC Regulator Input (9vAC)	F1 G.I. 5A Slo-Blo Playfield	F1 3A 250v Slo-Blo 50v DC Output (All Fuses) Lower Right Flipper	F1 8A Slo-Blo 32v DC BR2 Coils/Flashers
F2 7A Slo-Blo +5vDC Regulator Input (9vAC)	F2 G.I. 5A Slo-Blo Backbox Dr./Spkr. Panel	F2 3A 250v Slo-Blo 9v AC Holding	F2 8A Slo-Blo 18v DC BR1 Lamps
F3 Not Used	F3 G.I. 5A Slo-Blo Playfield & Coin Door	F3 3A 250v Slo-Blo 50v DC Output Left Flipper	F3 8A Slo-Blo 18v DC BR3 Display
F4 8A Slo-Blo Switched Illum'tion Buss (18vDC)	F4 G.I. 5A Slo-Blo Backbox Door	F4 3A 250v Slo-Blo 9v AC Holding	Cabinet Fuses
F5 4A Slo-Blo Solenoid (32vDC) Bumpers, Sling-shots, etc.	F5 50v 5A Flippers /All 50v Coils	F5 3A 250v Slo-Blo 50v DC Output Upper Right Flipper	Main Fuse Line: 8A Slo-Blo 250v International 2X 4A Slo-Blo 250v
F6 5A Slo-Blo Solenoid Buss (34vDC) L/R Relay Coils/Flash	F6 32v Flash Lamps 3A Slo-Blo/Right		
F7 0.5A 250v Slo-Blo Display Reg. Input (90vAC)	F7 32v 3A Coils/Flash Right/Left		
	F8 50v 4A / 50v Coils		
	F9 50v 5A Laser Kick		

GAME OPERATION & FEATURES

Standard Features

Insert coin(s), the game makes a sound for the first credit and generates sounds for each subsequent coin and the display indicates the number of credit(s) posted. Depress the credit button and a start-up sound is produced, the posted credit(s) are reduced by one. The display now indicates the player or # of players selected from the total depressions of the credit button. The display indicates the ball in play, and a ball is served to the shooter lane. Additional players may be added by pressing the Credit button before the end of ball 1. At game start, an introduction is shown followed by Skill Shot Graphics. (Note: Any 1/2 credit remaining during game play after the end of ball 1, or power down, will be eliminated.)

The second closure (adjustable) or prolonged closure of the plumb bob tilt switch tilts the ball in play. Closure of the slam tilt switch on the coin door ends the current game(s).

At the end of each ball, earned bonuses are collected. If the player enabled the EB Buy-In Feature*, the player now has the option of purchasing an extra ball to continue game play (See Extra Ball (EB) Buy-In Feature below). Otherwise, the system produces a random 2-digit number (a multiple of 10; 00 to 90) for a Match feature (adjustable). Matching the last two digits of a player score with this number awards a credit. Some geographical areas do not allow the award of a free game, this can be adjusted with Adj. 4, Replay Award. Players exceeding high score levels receive free credits (adjustable) and are able to enter their initials with the new High Score achieved. To enter your initials, use the left & right flipper buttons to choose letter or character as seen on the Visual Display. Hitting the Start Button locks the letter or character in. Proceed with the 2nd & 3rd letter. The game then proceeds into the game-over mode and then to the attract mode. A custom message (adjustable) can be displayed during the attract mode.

*Extra Ball (EB) Buyin Feature

An option to add an extra ball(s) after the game is finished. TO ACTIVATE THE *EXTRA BALL BUY-IN FEATURE*, THE PLAYER MUST PRESS THE EB BUY-IN BUTTON DURING THE COURSE OF THE GAME. At the end of normal game play, the same player may choose to continue the game at the same score and features active by pressing the EXTRA BALL BUTTON prior to the expiration of the "countdown timer." Pressing the START BUTTON or BOTH FLIPPERS SIMULTANEOUSLY cancels this feature. If the player does not have any credits, the player will get "more time" to add credit. The number of extra balls which can be added to a game can be adjusted with Adj. 38, Extra Ball Buyin Count. Default is 01. Set to 01, will allow only 1 extra ball to be purchased per game. Set to UNLIMITED, after the end of the game the countdown will appear after the end of each ball for the option of purchasing another extra ball. Set to 00, will make this feature unavailable.

Manual Percentaging

This game is equipped with Manual Percentage Adjustment. As previously with our games, you can either set operator adjustments for a replay percent or you can set a fixed replay score.

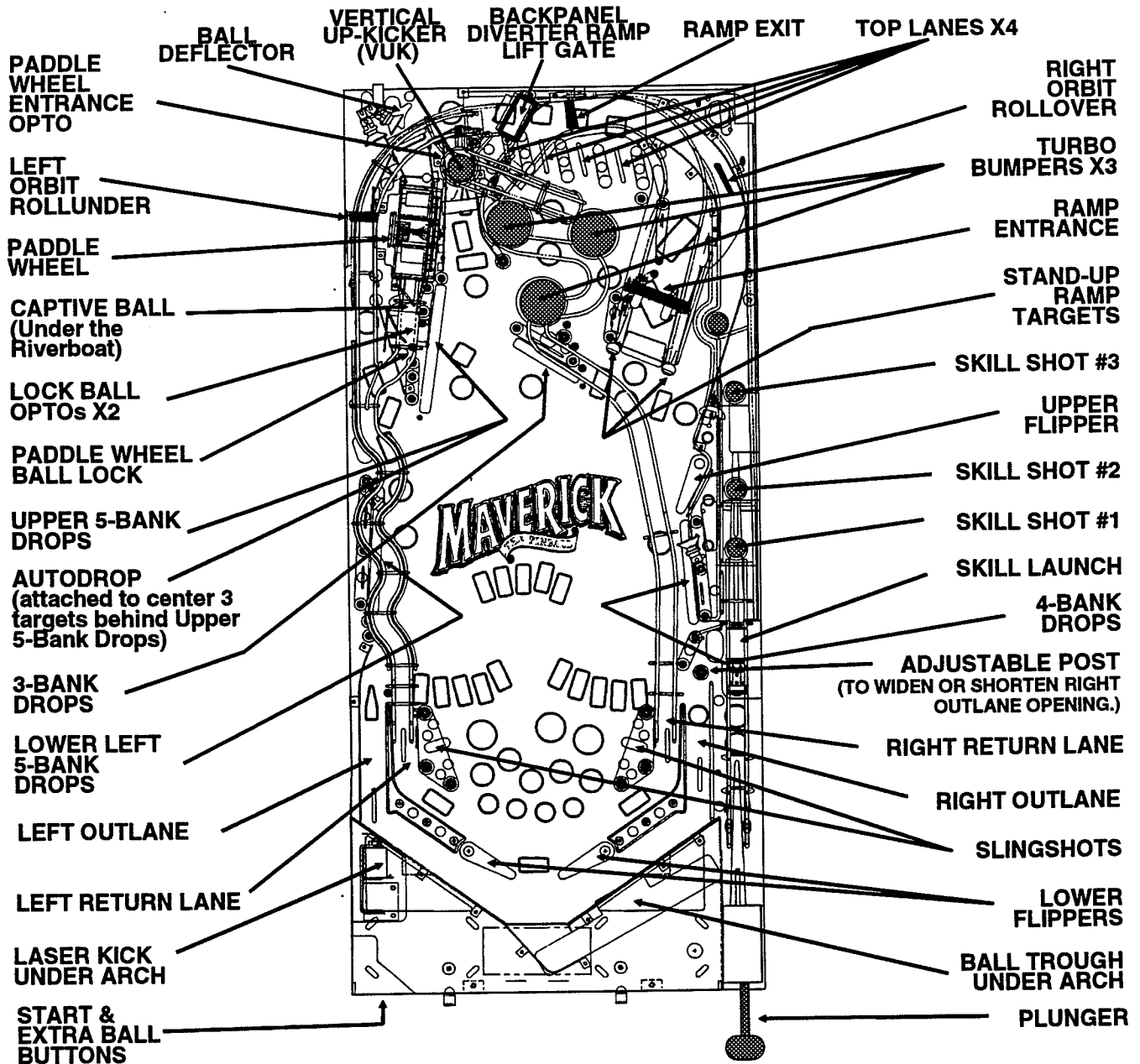
If you set operator adjustments for a particular replay percent, the game will compute a recommended score to keep the game at that replay percentage. If a change is recommended and the game coin door is opened, the display will indicate a recommended replay score to beat and make a sound to alert the operator. By pressing the start button, the score to beat will be changed to the recommended level. If you close the coin door or go into Audit or Adjustment Mode, no score change will be made.

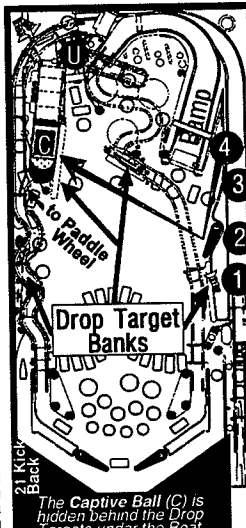
You may choose to ignore the recommended change; for example, you may not think last week's players were the usual crowd. Just close the door and the message will disappear without altering the existing level. Or you may choose to make a different score to beat adjustment; this is done by utilizing Adj. 02, Starting Replay Score.

Playfield Overview and Game Rules (See the following pages)

The following pages describe the Game Rules. On the next page is a playfield overview to show the locations of the featured items. Your game includes an instruction card. The instruction card on the next page may be photo-copied as a temporary replacement if required. Please note, rules and featured items may be subject to change through production.

Playfield Overview and Game Rules





♣ ♦ ♠ ♥ **Maverick, The Movie** ♣ ♦ ♠ ♥

SKILL SHOT Shoot ①, ②, or ③ for Award, or ④ for "flipper skill shot" by hitting the *Captive Ball (C)* under the Riverboat.

MULTIBALL Shoot *Ramp* to score Jokers - 3 Jokers lights Paddle Wheel for ball lock. Lock balls inside the Riverboat to enable *Multiball*.

JACKPOTS Shoot Ramp for *Multiball Jackpots*, then complete all Drop Targets to light *Super Jackpot* at the Ramp.

PLAYING POKER Shoot cards on the lit bank(s) to win chips. Shoot *Up-Kicker (U)* to *Raise* or *Fold*. Cards on unlit banks score discards - complete your hand before discards reach zero.

CHIP FEATURES Win 5 chips to start a Chip Feature.
 '21' Play Blackjack at *Up-Kicker* to relight 21 *Kick Back*.

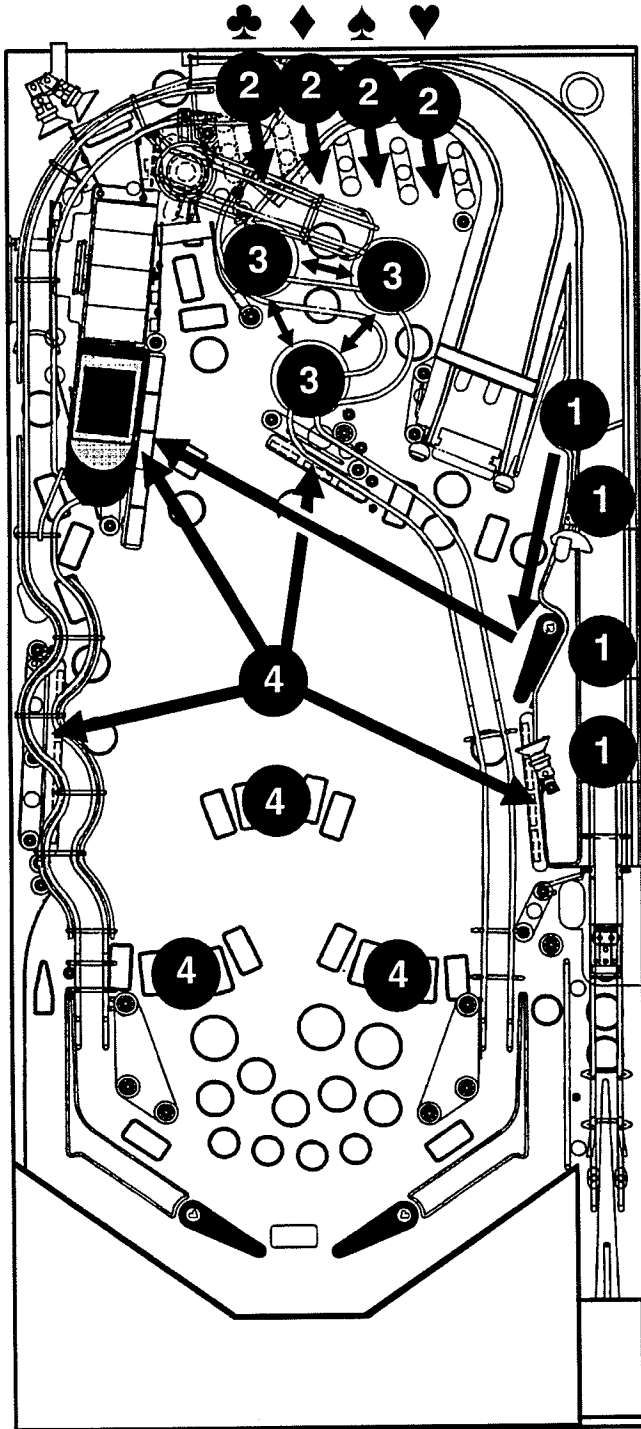
Hint Pressing the Extra Ball Buyin Button during the course of a game activates the *Extra Ball Buyin Feature* at the end of game play!

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THE PINBALL

GAME RULES



1 Plunger Skill Shots

Shoot the ball into the desired hole 1, 2 or 3 to collect the award indicated in the display. Shoot the ball into the unmarked hole, then hit the ball with the upper flipper into the **Captive Ball** under the *Riverboat* to start Drop Poker.



2 Card Suits (Top Lanes)

Completing the top lanes advances the bonus multiplier: 2X, 4X, 6X, 8X, to 10X. Subsequent completions score 20M. Use *flipper buttons* to change position of any lit lanes. BonusX resets at the start of each ball.



3 Turbo Bumpers

Turbo Bumpers start at 250K per hit each ball and increase by 250K every 10 hits up to a maximum of 1M.



4 Playing Poker

In regular single-ball play, players must beat the poker hand held by the characters on the playfield. Players must complete the *flashing target bank* to beat the playfield's hand.

When the Playfield Character Holds:	Player Must Shoot:
Ace of Spades	Pair (Ramp Stand-Ups)
Pair of Tens	3-Of-A-Kind (3-Bank) Full House (Ramp Stand-Ups & 3-Bank)
3-Of-A-Kind	Straight (Upper 5-Bank)
Full House	4-Of-A-Kind (Right 4-Bank)
Straight Flush	Royal Flush (Lower 5-Bank)

continued next page

MAVERICK

THE FINEALL

GAME RULES



4 Playing Poker cont.

While completing their hands, players have a limited number of **DISCARDS** as shown on the display. Hitting a card on an unlit target bank counts as a discard - and players must complete their hand before they run out of discards! If they do, they win the hand and a 5M chip, otherwise the player loses the hand.

Accumulate five (5) 5M chips to win a 25M chip and start a **Maverick Feature**.



5 Spot Card

Players who quickly shoot the **VUK** after the ball rolls through either return lane succeed in sneaking a card that they need into their hand!



6 Raise or Fold

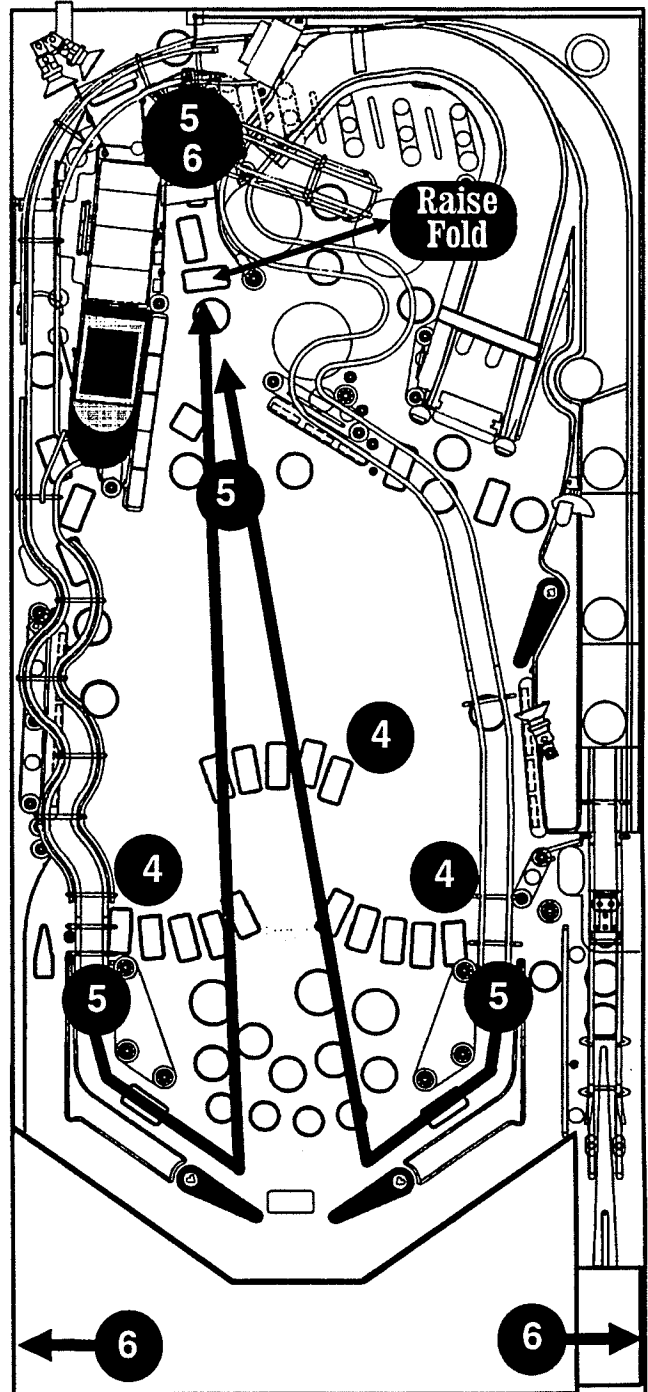
Players can **RAISE** or **FOLD** on every hand dealt by shooting the **VUK** and pressing the indicated flipper button. Players who **RAISE** could win two 5M chips on their current hand - those who **FOLD** lose nothing and play continues as a new hand is dealt.



7 Winning Streak

Players multiply their chip value by the number of consecutive hands won. Winning a regular hand results in 5M x *Winning Streak*. Winning a hand after a **RAISE** awards 10M x *Winning Streak*. Those who **FOLD** **WILL NOT** break their current *Winning Streak*.

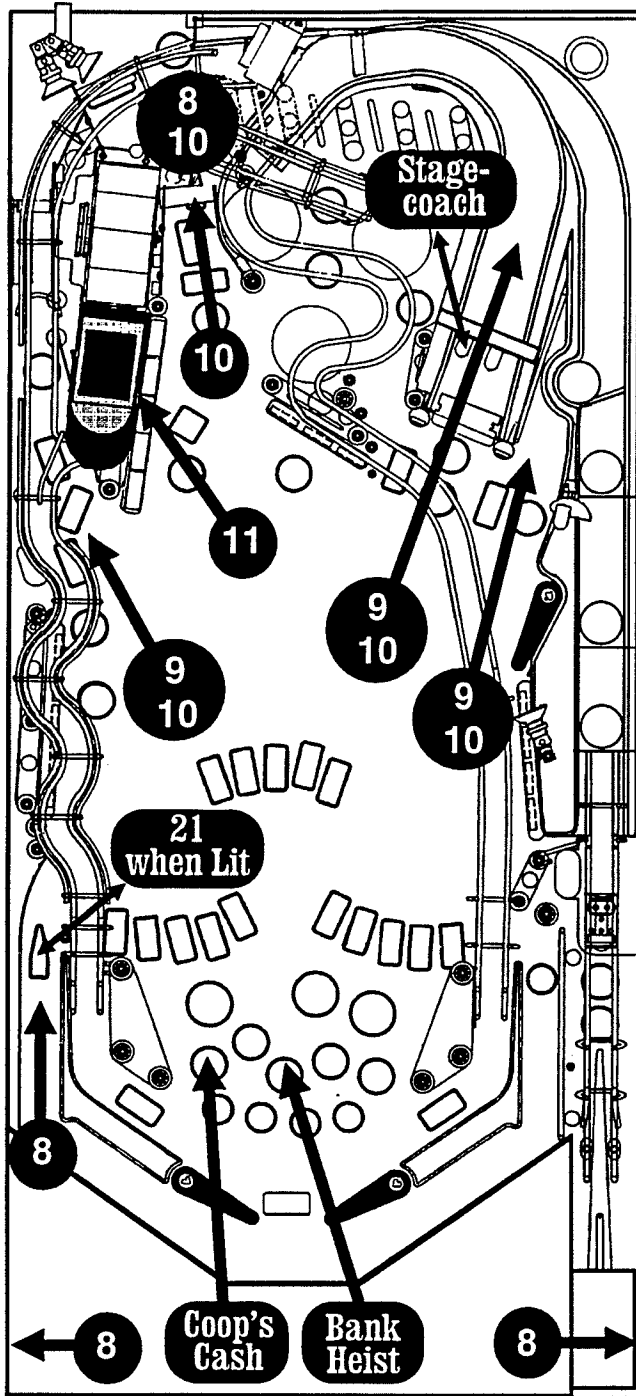
4 Display



MAVERICK

THE PINBALL

GAME RULES



'21' for Kickback

If the *Kickback* is not lit, a shot to the **VUK** will deal a hand of *head-to-head Blackjack*. Players press the indicated *flipper button* to **HIT** or **STAND**. Dealer must **HIT** with 1-16 and **STAND** on 17-21. Players must be closer to 21 than the dealer's hand (without going over) to win. Pushes (ties) go to the player. Winning the hand relights the *Kickback*.



Stagecoach Mystery

11 randomly selected Awards are available for collection at the Stagecoach when lit. Mystery lites at 3, 7, 12, 18, 25, 33, 42 ... *Orbit Shots*. Awards are given in set order during Tournament Play.

Maverick Features:

A Feature is started whenever a player wins 5 chips and acquires a 25M chip.



Coop's Cash

Complete the \$ shots (**Left Orbit, VUK, Ramp, and Right Orbit**) as many times as possible before the timer expires. \$ shots start at 10M each. Completing all four starts a roving \$ shot worth 50M. Hitting the roving \$ adds 10M to the value of the four \$ shots and the feature restarts!



Bank Heist

Shoot the **Captive Ball** up to 3 times to rob the bank before the timer runs out. Value of the loot is 100M X number of hits.

MAVERICK

THE FINAL

GAME RULES

Maverick Features cont.:



12 Lauren Belle

Shoot for the **Paddle Wheel** to collect as many **Mystery** payoffs as possible from the *Video Slot Machine* before the timer expires. The more times the player shoots the **Paddle Wheel**, the more liberal the payoffs from the slot machine become!



13 Angel's Revenge

Fast scoring in the *Wild West* - every switch scores 250K and adds 250K to the escrow bounty. Every 10 switch closures advance the award 250K while time remains. Shoot the **VUK** to collect the escrow bounty.



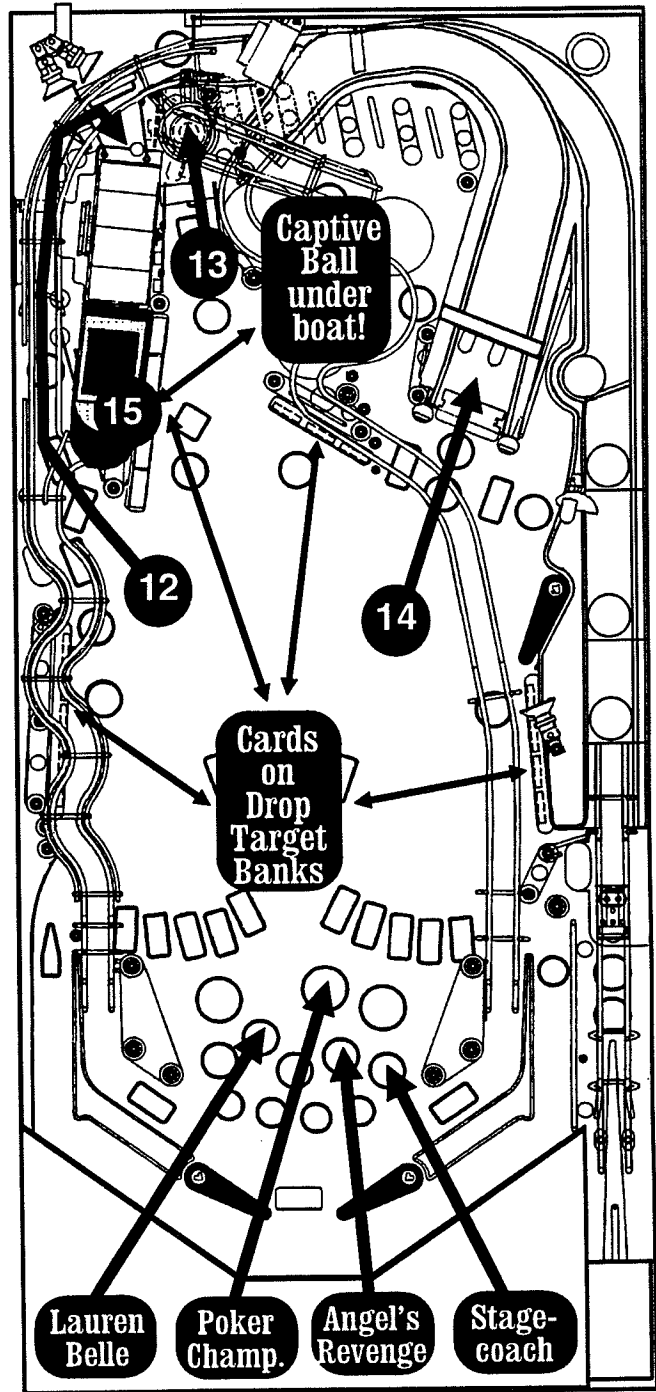
14 Stagecoach

Stop the runaway Stagecoach before it plummets off the cliff! Ramp Shots move *Maverick* into position and collect a progressive award = 1M per Drop Target + 10M per Ramp Shot as long as time remains.



15 Poker Championship

Knock down cards on all **Drop Targets** then shoot the **VUK** to collect the *Championship Pot*. **Drop Target Banks** add 1M x number of balls in play to the *Championship Pot*. **Completing Banks** adds 10M x number of balls in play to the pot and resets the **Banks**. Shooting the **Captive Ball** adds 100M to the pot. Balls lost before the timer runs out are returned to the player to be plunged back into play!



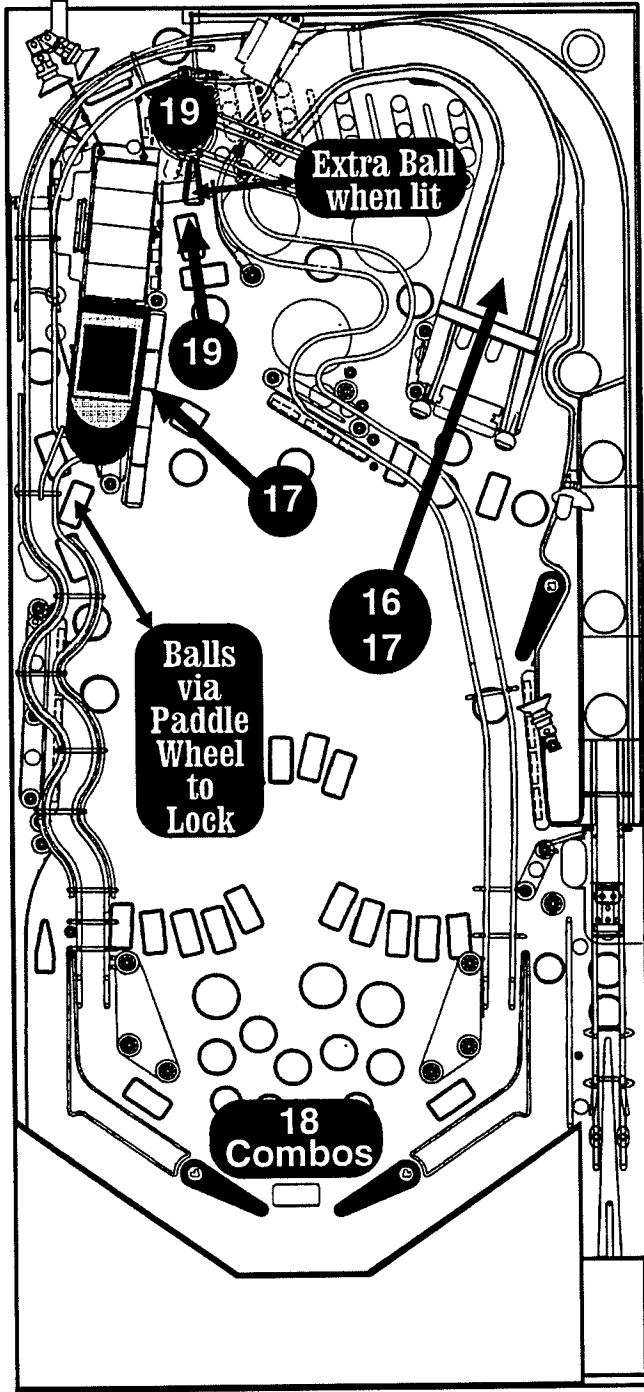
MAVERICK

THE PINEBALL

GAME RULES

Multiball Features:

20 Bonus



16 Multiball Ready

Shoot the **Ramp** to score **Jokers** - Collecting 3 **Jokers** lights Paddle Wheel for ball lock. Lock balls inside the Riverboat to enable **Multiball**.



17 Multiball Jackpots

Shoot Ramp for **Multiball Jackpots**, then complete all Drop Targets to light **Super Jackpot** at the **Ramp**.

Sharpshooting:



18 Combination Shots

Maverick features several multi-way combos. These combos involve natural sequences of key shots in the game. Several undocumented difficult combos may also be present.



19 Extra Ball

Extra Ball is collected at the **VUK** whenever lit during game play.



20 Bonus

End of **BALL BONUS** is the sum of:

- ♣ The number of Ramps completed on the Current Ball @ 200K per Ramp.
- ♦ The number of Cards knocked down on the Current Ball @ 200K per card.
- ♠ All Poker Chips won @ 1M per chip times the currently earned bonus multiplier.
- ♥ **BONUS** = [Ramp Shots x 200K + Cards down x 200K + Chips x 1M] x BonusX.

AUDIT FUNCTIONS

General

There are 82 audit functions provided for accounting purposes and for evaluation of game difficulty adjustments. Audit functions are split into two groups. There are 12 most-used audits (1 through 12) in a 'quick look' group and 70 less-used audits (13 through 82), in an 'Expanded' Group. The various auditing functions are summarized in the **GAME AUDIT TABLE** and, when accessed, are shown on the Dot Matrix Display. The *Audit Number* is shown in the top of the display, the *Description* is shown next and the *Audit Total* in the display. Access and control is provided from switches located on the inside of the coin door.

To access audit functions, open the coin door and make sure that the **FORWARD/REVERSE** switch is in the **FORWARD** (up) position. Depress the **STEP** switch and the display indicates **AUDITS & ADJUSTMENTS**. This indicates access to audit functions.

With the **FORWARD/REVERSE** push-button switch still in the **FORWARD** (up) position, depressing the **STEP** push-button switch advances through the audit functions one at a time. To review lower-numbered functions, set the forward/reverse push-button switch to the **REVERSE** (down) position and operate the **STEP** push-button switch.

To access expanded audits, operate the step push-button until **AUDIT 12, Expand Audits** is displayed. Set the choice to **YES** as indicated in the lower display by depressing the Game Start push-button and then depress the step push-button. The request is installed and Audit 13 is displayed. When you exit audits and adjustments, the Audit 12 setting is returned to off for the next time that a review of audits are required.

Audit totals may be reset to zero using Game Adjustment, **ADJUSTMENT 10, Reset All Audits**. Game adjustments (1 to 12 and 13 to 58) begin after the last audit function (12 or 82). Once audits functions have been recorded, and if no adjustments are required, you may return the game to the attract mode. If adjustments are required, continue pressing the **STEP** button until the game adjustments are reached. See Game Adjustments for details.

Audits - 'Quick Look' Functions

Au. #	Audit Name	Audit Definition
Au. 1	Total Paid Credits	The total number of paid credits is displayed.
Au. 2	Free Game Percentage	The Total Free Plays (Audit 25) divided by Total Plays (Audit 26).
Au. 3	Average Ball Time	(In Seconds) The Total Play Time divided by Total Balls Played (Audit 13).
Au. 4	Average Game Time	The Average Game Time expressed in minutes and seconds.
Au. 5	Coins Thru Left Slot	The total amount of coins registered through the left slot.
Au. 6	Coins Thru Right Slot	The total amount of coins registered through the right slot.
Au. 7	Coins Thru Center Slot	The total amount of coins registered through the center slot.
Au. 8	Coins Thru 4th Slot	The total amount of coins registered through the fourth slot.
Au. 9	Total Coins	The total number of coins dropped through all four coin slots.
Au. 10	Total Earnings	The total cash value accumulated since the last Factory Restore occurred.
Au. 11	Meter Clicks	Provides the total number of money clicks accumulated, based on the country's lowest coin denomination used for the game credit.
Au. 12	Expand Audits?	(On/Off) This audit permits operator to proceed into expanded audits.



MAVERICK

THE PENBALL



Game Audit Table

Item/Description		Item/Description	
1	TOTAL PAID CREDITS	42	LEFT DRAINS
2	FREE GAME PERCENTAGE	43	CENTER DRAINS
3	AVERAGE BALL TIME	44	RIGHT DRAINS
4	AVERAGE GAME TIME	45	SLAM TILTS
5	COINS THRU LEFT SLOT	46	TOTAL BALLS SAVED
6	COINS THRU RIGHT SLOT	47	TOTAL RAMP SHOTS
7	COINS THRU CENTER SLOT	48	UPPER 5-BANK COMPLETED
8	COINS THRU 4TH SLOT	49	LOWER 5-BANK COMPLETED
9	TOTAL COINS	50	3-BANK COMPLETED
10	TOTAL EARNINGS	51	4-BANK COMPLETED
11	METER CLICKS	52	TOTAL ORBIT SHOTS
12	EXPAND AUDITS?	53	SKILL #1: LOCK BALL
13	TOTAL BALLS PLAYED	54	SKILL #2: START MODE
14	TOTAL EXTRA BALLS	55	SKILL #3: SUPER POPS
15	EXTRA BALL PERCENT	56	SKILL: CAPTIVE BALL
16	REPLAY 1 AWARDS	57	MODE START VIA CHIPS
17	REPLAY 2+ AWARDS	58	STAGE COACH MYSTERY
18	TOTAL REPLAYS	59	TOTAL RAISES
19	REPLAY PERCENT	60	TOTAL FOLDS
20	TOTAL SPECIALS	61	PAIR COMPLETED
21	SPECIAL PERCENT	62	3-OF-A-KIND COMPLETED
22	TOTAL MATCHES	63	STRAIGHT COMPLETED
23	HIGH SCORE AWARDS	64	FULL HOUSE COMPLETED
24	HIGH SCORE PERCENT	65	4-OF-A-KIND COMPLETED
25	TOTAL FREE PLAYS	66	ROYAL FLUSH COMPLETED
26	TOTAL PLAYS	67	TOTAL HANDS WON
27	0.0M TO 99.9M	68	HANDS WON VIA RAISE
28	100.0M TO 199.9M	69	HANDS LOST VIA RAISE
29	200.0M TO 299.9M	70	TOTAL HANDS PLAYED
30	300.0M TO 499.9M	71	AVERAGE HANDS PLAYED
31	500.0M TO 999.9M	72	AVERAGE HANDS WON
32	1.0B+ SCORES	73	TOTAL BLACKJACKS WON
33	AVERAGE SCORES	74	TOTAL BLACKJACKS LOST
34	SERVICE CREDITS	75	MULTIBALL LIT
35	PROPRIETARY	76	2-BALL MULTIBALL
36	PROPRIETARY	77	3-BALL MULTIBALL
37	PROPRIETARY	78	4-BALL MULTIBALL
38	TOTAL BUYIN GAMES	79	MULTIBALL RESTART
39	TOTAL EXTRA BALL BUYINS	80	2+ MULTIBALL START
40	EXTRA BALL BUYIN REPLAYS	81	TOTAL JACKPOTS
41	EXTRA BALL BUYIN HSTD	82	TOTAL SUPER JACKPOTS

Audits - 'Expanded' Generic Functions

Au.#	Audit Name	Audit Definition
Au. 13	Total Balls Played	The total of regular and extra balls.
Au. 14	Total Extra Balls	The total number of extra balls awarded.
Au. 15	Extra Balls Percent	The Total Extra Balls (Au.14) divided by Total Plays (Au. 26).
Au. 16	Replay 1 Awards	The total awards (credit, extra ball, or audit) for level 1.
Au. 17	Replay 2+ Awards	The total awards (credit, extra ball, or audit) for level(s) 2 or higher.
Au. 18	Total Replays	The total awards (credits, extra balls, or audit only) for exceeding replay score levels.
Au. 19	Replay Percent	The Replay Total awards for exceeding replay score levels, Total Replays (Au. 18) divided by Total Plays (Au. 26).
Au.20	Total Specials	The total awards (credits, extra balls, or scores) for making specials.
Au. 21	Special Percent	The Total Specials (Au. 20) divided by Total Plays (Au. 26).
Au. 22	Total Matches	The total credits awarded for matching the last two digits of the score with the system-generated Match Number at the end of the game. Percentage of match credits will be adjustable from 0% to 10%, by Adj. 13 (Match Percentage), if enabled.
Au. 23	High Score Awards	The total credits awarded for exceeding the High-Score-To-Date scores.
Au. 24	High Score Percent	The High Score Awards (Au. 23) divided by Total Plays (Au. 26).
Au. 25	Total Free Plays	The total free credits for replays, High-Score-To-Date, Specials, and Match.
Au. 26	Total Plays	The sum of Total Paid Credits (Au.1) and Total Free Plays (Au. 25). Note that free credits are not recorded in the Audit until they are actually used.
Au. 27	0.0M to 99.9M	Provides the total number of games the Player's final score was between 0 and 99,999,990 points.
Au. 28	100.0M to 199.9M	Provides the total number of games the Player's final score was between 100,000,000 and 199,999,990 points.
Au. 29	200.0M to 299.9M	Provides the total number of games the Player's final score was between 200,000,000 and 299,999,990 points.
Au. 30	300.0M to 499.9M	Provides the total number of games the Player's final score was between 300,000,000 and 499,999,990 points.
Au. 31	500.0M to 999.9M	Provides the total number of games the Player's final score was between 500,000,000 and 999,999,990 points.
Au. 32	1.0B+ Scores	Provides the total number of games the Player's final score was over 1,000,000,000 points.
Au. 33	Average Scores	Provides the Average Score by adding the Final Score of each game to a table and dividing this sum by the Total Plays (Au. 26).

Audits - 'Expanded' Generic Functions (cont.)

Au.#	Audit Name	Audit Definition
Au. 34	Service Credits	Provides the total number of Service credits added to the game. <i>See Game Diagnostics on page 29 for instructions regarding entry of Service Credits.</i>
Au. 35, 36, 37	Proprietary	Provides information to the game designer to aid in design development (not for consumer use).
Au. 38	Total Buyin Games	Provides the number of times a player utilized the Buyin Feature.
Au. 39	Total Extra Ball Buyins	Provides the total number of times the Extra Ball Buyin Feature was used.
Au. 40	Extra Ball Buyin Replays	Provides the total number of replay awards that resulted from the use of the Total Extra Ball Buyins (Au. 39) Feature.
Au. 41	Extra Ball Buyin HSTD	Provides the total number of times in which use of the Extra Ball Buyin Feature resulted from beating the High-Score-To-Date (HSTD).
Au. 42	Left Drains	Provides the number of times the ball drained out the left drain.
Au. 43	Center Drains	Provides the number of times the ball drained out the center drain.
Au. 44	Right Drains	Provides the number of times the ball drained out the right drain.
Au. 45	Slam Tilts	Provides the number of times the Slam Tilt switch was activated.
Au. 46	Total Balls Saved	Provides the total number of times the Total Balls Saved Feature was used. This feature is enabled at the start of each ball and is disabled as soon as the ball makes contact with 5 game switches or allocated time expired.

Audits - 'Expanded' Game Specific Functions

Au.#	Audit Name	Audit Definition
Au. 47	Total Ramp Shots	Provides the total number of times the Right Ramp was scored.
Au. 48	Upper 5-Bank Completed	Provides the total number of times that the Upper Left 5-Bank Drop Target was completed.
Au. 49	Lower 5-Bank Completed	Provides the total number of times that the Bottom Left 5-Bank Drop Target was completed.
Au. 50	3-Bank Completed	Provides the total number of times that the Center 3-Bank Drop Target was completed.
Au. 51	4-Bank Completed	Provides the total number of times that the Right 4-Bank Drop Target was completed.
Au. 52	Total Orbit Shots	Provides the total number of times the left or right orbits were scored.

Audits - 'Expanded' Game Specific Functions (cont.)

Au.#	Audit Name	Audit Definition
Au. 53	Skill #1: Lock Ball	Provides the total number of times the Skill Shot #1 "Lock Ball" Feature was awarded via the Skill Shot #1 Ramp Hole.
Au. 54	Skill #2: Start Mode	Provides the total number of times the Skill Shot #2 "Start Mode" Feature was awarded via the Skill Shot #2 Ramp Hole.
Au. 55	Skill #3: Super Pops	Provides the total number of times the Skill Shot #3 "Super Pops" Feature was awarded via the Skill Shot #3 Ramp Hole.
Au. 56	Skill: Captive Ball	Provides the total number of times the Skill Shot "Captive Ball" Skill Shot was awarded via the Top Ramp Hole via Upper Flipper and shot directly into the Captive Ball behind the Upper Left 5-Bank Drop Targets.
Au. 57	Mode Start Via Chips	Provides the total number of times the "Mode Start" Feature was awarded via collection of Chips.
Au. 58	Stagecoach Mystery	Provides the total number of times the "Stagecoach Mystery" was awarded from a ramp shot.
Au. 59	Total Raises	Provides the total number of times that a hand was raised via a Raise at the VUK.
Au. 60	Total Folds	Provides the total number of times that a hand was folded via a Fold at the VUK.
Au. 61	Pair Completed	Provides the total number of times a 'Pair' was lit & achieved.
Au. 62	3-Of-A-Kind Completed	Provides the total number of times a '3-Of-A-Kind' was lit & achieved.
Au. 63	Straight Completed	Provides the total number of times a 'Straight' was lit & achieved.
Au. 64	Full House Completed	Provides the total number of times a 'Full House' was lit & achieved.
Au. 65	4-Of-A-Kind Completed	Provides the total number of times a '4-Of-A-Kind' was lit & achieved.
Au. 66	Royal Flush Completed	Provides the total number of times a 'Royal Flush' was lit & achieved.
Au. 67	Total Hands Won	Provides the total number of times a Hand was WON.
Au. 68	Hands Won Via Raise	Provides the total number of times a player WON a hand on a Raise.
Au. 69	Hands Lost Via Raise	Provides the total number of times a player LOST a hand on a Raise.
Au. 70	Total Hands Played	Provides the total number of times a Hand was played.
Au. 71	Average Hands Played	Provides the average number of Hands that were played per game.
Au. 72	Average Hands Won	Provides the average number of Hands that were won per game.
Au. 73	Total Blackjacks Won	Provides the total number of times a Blackjack Hand was won.
Au. 74	Total Blackjack Lost	Provides the total number of times a Blackjack Hand was lost.
Au. 75	Multiball Lit	Provides the total number of times the Multiball Feature was lit.
Au. 76	2-Ball Multiball	Provides the total number of times the 2-Ball Multiball Feature was awarded.

GAME ADJUSTMENTS

General

There are 59 adjustable functions provided to vary difficulty of play and to periodically reset audits and the high score levels. The various game adjustments are summarized in the **Game Adjustments Table** and, when accessed, are shown on the player score display. The *Adjustment Number* is shown in the top of the display, the *Description* is shown next, and the setting, in the bottom of the display. Access and control is provided from switches located on the inside of the coin door.

Game adjustments are accessed from the audit mode. With the audits displaying **AUDIT 1** and the **FORWARD/REVERSE** switch in the **REVERSE** (down) position, depress the **STEP** switch and **ADJUSTMENT 99** is shown at the top of the display, *Factory Restore* is shown in the middle of the display, and **NO** is shown in the bottom of the display. With the audits displaying **AUDIT 10** or **99**) and the **FORWARD / REVERSE** switch in the **FORWARD** (up) position, depress the **STEP** switch and **ADJUSTMENT 1** is shown in the top of the display, *Replay/Manual* is shown in the middle of the display, and the setting is shown in the bottom of the display.

With the **FORWARD / REVERSE** switch in the **FORWARD** (up) position, depressing the **STEP** switch advances through the game adjustments one at a time. With it in the **REVERSE** (down) position, the **STEP** switch selects lower-numbered adjustments. To rapidly scroll through adjustments, hold the **STEP** switch depressed. Adjustment values are changed by operating the **GAME START** push-button. The **FORWARD / REVERSE** switch setting determines whether the values are increased or decreased. (With the **FORWARD / REVERSE** switch up, the value increases, with it down, the value decreases). When the **STEP** switch is depressed the display indicates **REQUEST INSTALLED**.

Replay And Generic Features

Replays may be adjusted either for fixed levels or for a system-adjusted manual percentage of replay awards. Four levels may be selected. Adjustments allow awarding of a credit or an extra ball as each level is exceeded. With the manual percentage feature, if the actual replay percentage is higher or lower than that desired, the game computes new recommended manual percentage score(s). When the coin door is subsequently opened the player displays indicate the recommended level and a sound is made to alert the operator of a potential change. This new level is entered into adjustments simply by pressing the game start push-button. (If the coin door is closed or you enter audits/adjustments or diagnostics, the replay level is not changed.)

Adjustments - 'Replays'

Adj.#	Adjustment Name	Adjustment Definition
Adj. 1	Replays: Fixed/Manual	Adjust for percentage of awards for Replay Levels (1% through 50%). Proceed to Adj. 2 & 3 for Starting Replay Levels. Lower the automatic value to 0% and the display will indicate Fixed. Proceed to Adj. 2 & 3 for Fixed Replay Levels.
Adj. 2	Starting Replay Score	Adjust the starting Replay 1 setting to between 100M and 9.99M.
Adj. 3	Replay Levels	Adjust the number of replay levels to be active (1 to 4). Any additional starting replay levels are automatically set to values higher than Replay 1. Adjust Replay 1 level to between 100M and 9.99M. (Same as Start Replay). If Adj. 3 is set for 2, 3, or 4, adjust Replay 2, 3, or 4 (respectively) level to between 100M & 9.99M.
Adj. 4	Replay Award	Set for replays to award: CREDIT, EXTRA BALL, NONE or SPECIAL (When score threshold is achieved, a Playfield Special is lit.)
Adj. 5	Free Game Limit	Adjust the max. # of free games that may be accumulated per game; 0 - 9.
Adj. 6	Extra Ball Limit	Adjust the max. # of extra balls that may be accumulated per game; 1- 9 or OFF.



MAVERICK

THE PINBALL



Game Adjustment Table

Adj. Nº	Description	Factory Setting	Adj. Nº	Description	Factory Setting
1	REPLAYS: FIXED/MANUAL	10%	31	CUSTOM MESSAGE	Enable
2	STARTING REPLAY SCORE	900M	32	ATTRACT MODE MUSIC	On
3	REPLAY LEVELS †	1	33	FLASH LAMP POWER	Normal
4	REPLAY AWARD	Credit	34	COIL PULSE POWER	Normal
5	FREE GAME LIMIT	5	35	PROPRIETARY	1
6	EXTRA BALL LIMIT	3	36	NEXT GAME PROMOTION	Off
7	GAME DIFFICULTY †	Mod.	37	BUYIN TYPE	XBall
8	GAME PRICING †	USA 7	38	EXTRA BALL BUYIN COUNT	1
9	RESET COIN AUDITS	No	39	GAME RESTART	Yes
10	RESET GAME AUDITS	No	40	EXTRA BALL PERCENTAGE	25%
11	RESTORE HIGH SCORES	No	41	BACKGROUND MUSIC VOLUME	100%
12	EXPAND ADJUSTMENTS?	No	42	BILL VALIDATOR	No
13	MATCH PERCENTAGE	09%	43	TOURNAMENT MODE	Off
14	BALLS PER GAME	3	44	EXTERNAL REPLAY KNOCKER	Off
15	TILT WARNINGS	1	45	SPECIAL MEMORY	Yes
16	REPLAY BOOST	Yes	46	LASER KICK CRITERION	0
17	CREDIT LIMIT	30	47	DISCARD COUNT	12
18	ALLOW HIGH SCORES	Yes	48	PLAYER WINS 21 ON TIE	No
19	AWARD FOR HIGH SCORE #1	3	49	MULTIBALL RESTART	Easy
20	AWARD FOR HIGH SCORE #2	1	50	QUALIFY JACKPOT	No
21	AWARD FOR HIGH SCORE #3	1	51	MULTIBALL DIFFICULTY	Mod.
22	AWARD FOR HIGH SCORE #4	0	52	EXTRA BALL MEMORY	Yes
23	DEFAULT HIGH SCORE #1	2.4M	53	RAMP MEMORY	Yes
24	DEFAULT HIGH SCORE #2	2.1M	54	QUALIFYING LOCK RULE	Easy
25	DEFAULT HIGH SCORE #3	1.95M	55	SOFTWARE METER	00
26	DEFAULT HIGH SCORE #4	1.8M	56	LOCATION ID	0
27	DEFAULT HIGH SCORE #5	1.65M	57	GAME ID	0
28	DEFAULT HIGH SCORE #6	1.5M	58	RESET PRINTER?	No
29	HSTD RESET COUNT	700	59	PRINTER INTERFACE	Press Start To Print
30	FREE PLAY	No			
			99	Factory Restore	No

† Some settings result in Drop-Down Tables. Review the following pages which define all of the above adjustments.

Game Difficulty (Adj. 7)

Adj.#	Adjustment Name	Adjustment Definition
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Adj. 7 Game Difficulty

Any one of five INSTALL settings for this adjustment may be activated to automatically select settings for multiple adjustments affecting game difficulty. Use the Start button to choose the difficulty level you require and press the step button to activate the setting. After activation, the individual adjustments may be readjusted if desired. Refer to Install Adjustment Table for details.

Set to EXTRA EASY, EASY, FACTORY, HARD or EXTRA HARD.

(Note: Additional game features are not adjustable in by the Expanded Adjustments may also change using this setting.)

Install Adjustments	Adj. 7 Extra Easy	Adj. 7 Easy	Adj. 7 Moderate	Adj. 7 Hard	Adj. 7 Extra Hard
(47) Discard Count	14	13	12	11	10
(49) Multiball Restart	EXTRA EASY	EASY	EASY	HARD	EXTRA HARD
(50) Qualify Jackpot	NO	NO	NO	YES	YES
(51) Multiball Difficulty	EXTRA EASY	EASY	MODERATE	HARD	EXTRA HARD
(52) Extra Ball Memory	YES	YES	YES	YES	NO
(53) Ramp Memory	YES	YES	YES	NO	NO

NOVELTY / 5-BALL / ADD-A-BALL SETTINGS

The following three combinations are recommended for situations where local laws restrict certain game features

Novelty Play Rules - Set to establish recommended settings for no free play or extra balls:

Adj.	Adj. Name	Setting	Adj.	Adj. Name	Setting
1	Replays: Fixed/Manual	Fixed	6	Extra Ball Limit	00
3	Replay Levels	None	13	Match Percentage	Off
4	Replay Award	None	19	Award for High Score #1	03
5	Free Game Limit	00	20	Award for High Score #2	01

regarding the use of replays or the number of balls per game:

5-Ball Play Rules - Set to establish recommended settings for 5-ball play:

Adj.	Adj. Name	Setting	Adj.	Adj. Name	Setting
1	Replays: Fixed/Manual	07%	6	Extra Ball Limit	03
2	Starting Replay Score	1,500,000,000	13	Match Percentage	04
3	Replay Levels	01	14	Balls Per Game	05
4	Replay Award	Credit	19	Award for High Score #1	03
5	Free Game Limit	05	20	Award for High Score #2	01

Add-A-Ball Settings-To disable awarding of credits and provide awards with an extra ball:

Adj.	Adj. Name	Setting	Adj.	Adj. Name	Setting
4	Replay Award	Extra Ball	18	Allow High Scores	No
5	Free Game Limit	00	19-22	Award for High Score #1 - #4	00
13	Match Percentage	Off			

Game Pricing (Adj. 8)

There are two methods available for coin switch programming; Standard and Custom. Standard pricing uses a single adjustment (Adj. 8) to select a pricing scheme shown in the **Custom & Standard Pricing Tables**. Custom pricing is used to select additional pricing schemes defined by a Drop Down Menu.

With Adj. 8 set to **CUSTOM** operating the step button again initiates a drop down menu representing coin switch pulses for the left, right, center and fourth coin slots. The prescribed the number of pulses are required for one credit. For example, if *Left Coin Pulses*, was set to 02 and *Coin Switch Pulses Required for 1 Credit*, to 01 a coin in the left slot would produce two credits. Further, if *Left Coin Pulses*, was set to 01 and *Coin Switch Pulses Required for 1 Credit*, to 02, two coins in the left slot would be required for one credit.

Coin Switch Pulses Required for Bonus Credit may be set to post bonus credits when a minimum amount of coins are inserted at one time. For example, if *Left Coin Pulses* was set to 01, *Coin Switch Pulses Required for 1 Credit* to 01 and *Coin Switch Pulses Required for Bonus Credit* to 04, one credit would be posted for each of the first three coins in the left slot and two credits for the fourth coin.

Standard/Custom Pricing - Set for the desired pricing scheme from the Standard Pricing Table as indicated on the dot matrix display. For Custom Pricing, set to **CUSTOM**. When set to **CUSTOM**, the following adjustments are utilized to tailor each individual coin chute.

Left Coin Switch Pulses - Set the number of pulses registered for closure of the left coin switch; 00 to 99.

Right Coin Switch Pulses - Set the number of pulses registered for closure of the right coin switch; 00 to 99.

Center Coin Switch Pulses - Set the number of pulses registered for closure of the center coin switch; 00 to 99.

4th Coin Switch Pulses - Set the number of pulses registered for closure of the fourth coin switch; 00 to 99.

Coin Switch Pulses Required for 1 Credit - Set the number of coin switch pulses required to post one credit; 00 to 99.

Coin Switch Pulses Required for Bonus Credit - Set the number of coin switch pulses required to award the 1st bonus credit(s); 00 to 99.

Coin Switch Pulses Required for 2nd Bonus Credit - Set the number of coin switch pulses required to award the 2nd bonus credit; 00 to 99.

Credits awarded for 1st Bonus - Set the number of credits awarded for achieving the first Bonus level; 00 to 99.

CUSTOM PRICING TABLE													
Coin Mechs				Adjustments									
Left	Right	Center	4th	<i>Plays/Coins</i>	Left Pulses	Right Pulses	Mid Pulses	4th Pulses	Pulses /Credit	Pulses /Bonus	Pulses /2nd BONUS	Credit /1st BONUS	
25¢	25¢	\$1.00	N/U	1/25¢ 3/50¢	01	01	04	00	01	02	00	01	
				1/25¢ 5/\$1.00	01	01	04	00	01	04	00	01	
				1/25¢ 6/\$1.00	05	05	20	00	04	20	00	01	
5SCH	10SCH	10SCH	N/U	1/10 S	01	02	02	00	02	00	00	00	
				1/10 S 4/30 S	04	08	08	00	06	00	00	00	
10p	£1	50p	20p	1/30p 2/50p	01	15	06	02	03	00	00	00	
				5/£1	01	15	05	02	05	00	00	00	
				1/50p 3/£1	01	12	05	02	03	00	00	00	
				1/30p 4/£1									
20¢	\$1.00	N/U	N/U	1/60¢ 2/\$1.00	01	05	00	00	03	05	00	01	

Standard Pricing Table

Adj. 8 Standard Pricing Select	Coin Mechanisms				Pricing Scheme Explained <i>Number of "Plays" for Price Amount Shown</i>			
	Left	Center	Right	Right				
	1st	2nd	3rd	4th				
USA 1	25¢	\$1	25¢		1/25¢			
USA 2	25¢	\$1	25¢		1/50¢	2/75¢	3/\$1	
USA 3	25¢	\$1	25¢		1/50¢			
USA 4	25¢		25¢		1/50¢			
USA 5	25¢	\$1	25¢		1/50¢	5/\$2		
USA 6	25¢	\$1	25¢		1/50¢	2"4X25¢"	3/\$1 (bill)	Used to promote Bill Validator
USA 7 ★	25¢	\$1	25¢		1/50¢	4/\$1.50	6/\$2	
Austria	5S	10S	10S		1/10S	2/15S	3/20S	
Australia	20¢	\$A 1	\$A 2		1/\$A 1	3/\$A 2		
Australia 2	20¢	\$1	\$2		1/\$1	2/\$2		
Belgium	5 BF	20 BF	50 BF		1/20 BF	3/50 BF		
Canada	25¢	25¢	Can\$ 1		1/50¢	2/75¢	3/Can\$ 1	
Denmark 1	1DKr	5 DKr	10 DKr	20 DKr	1/3 DKr	2/5 DKr		
Denmark 2	1DKr	5 DKr	10 DKr	20 DKr	1/2 DKr	3/5 DKr	7/10 DKr	
Finland	1Fmk	5Fmk			1/3Fmk	2/5Fmk		
France 1 ★	1 Fr	5 Fr	10 Fr	20 Fr	1/3 Fr	2/5 Fr	5/10 Fr	11/20 Fr
France 2	1 Fr	5 Fr	10 Fr	20 Fr	1/5 Fr	3/10 Fr	7/20 Fr	
France 3	1 Fr	5 Fr	10 Fr	20 Fr	1/3 Fr	2/5 Fr	4/10 Fr	9/20 Fr
Germany 1	1DM	2DM	5DM		1/1DM	5/5DM		
Germany 2	1DM	2DM	5DM		1/1DM	6/5DM		
Germany 3 ★	1DM	2DM	5DM		1/2DM	2/3DM	3/4DM	5/5DM
Greece	50Dr		100Dr		1/50Dr	3/100Dr		
Holland (See Netherlands 2)								
Hungary	10 Ft	10 Ft	20 Ft		1/20 Ft	3/40 Ft		
Italy 1	500 Lit		500 Lit		1/500 Lit			
Italy 2	500 Lit		500 Lit		1/1000 Lit	3/2000 Lit		
Japan			100¥		1/100¥	3/200¥		
Korea	100Won		100Won		1/100Won			
Netherlands 1	1 Fls.	1 Fls.	2.5 Fls.		1/1Fls.	3/2.5 Fls.		
Netherlands 2 ★	1 Fls.	2.5 Fls.	5 Fls.		1/1Fls.	3/2.5 Fls.	6/5 Fls.	
New Zealand 1	\$NZ 1		\$NZ 2		1/\$NZ 1	2/\$NZ 2		
New Zealand 2	\$NZ 1		\$NZ 2		1/\$NZ 1	3/\$NZ 2		
Norway 1	5 NKr		10 NKr		1/5 NKr	2/10 NKr		
Norway 2	5 NKr		10 NKr		1/10 NKr	3/20 NKr		
Spain	100Pts		500Pts		1/100Pts	6/500Pts		
Sweden	1 SKr	5 SKr	10 SKr		1/10 SKr	2/15 SKr	3/20 SKr	
Switzerland 1 ★	1 SwF	2 SwF	5 SwF		1/1 SwF	6/5 SwF		
Switzerland 2	1 SwF	2 SwF	5 SwF		1/1 SwF	3/2 SwF	9/5 SwF	
UK 1	10p	50p	1£	20p	1/50p	3/1£		
UK 2	10p	50p	1£	20p	1/40p	3/1£		
UK 3 ★	10p	50p	1£	20p	1/50p			
Yugoslavia	5 Din		5 Din		1/5 Din			

★ Default Factory Setting.

Additional Generic Features

Adj.#	Adjustment Name	Adjustment Definition
Adj. 9	Reset Coin Audits	When enabled (set to YES) all coin / paid credit totals will be reset to zero when STEP is depressed.
Adj. 10	Reset Game Audit	When enabled (set to YES) all audit totals except for coins and paid credits will be reset to zero when STEP is depressed.
Adj. 11	Restore High Scores	When enabled (set to YES) the High Score Levels and associated initials will be restored to backup settings when STEP is depressed .
Adj. 12	Expand Adjustments?	When set to NO , depressing the STEP push-button advances directly to Adj. 99, FACTORY RESTORE . When set to YES , depressing the STEP push-button sequences through the expanded adjustments. When exiting from expanded adjustments, this function is reset to OFF for the next time that adjustments are required.
Adj. 13	Match Percentage	Set Match percent from 00% to 10% or OFF . At 00% the match display occurs at the end of the game but never awards a credit.
Adj. 14	Balls Per Game	Adjust the number of balls per game; 2 to 5 .
Adj. 15	Tilt Warnings	Adjust the number of plumb bob tilt switch closures before the ball in play is tilted; 1, 2, 3 or OFF .
Adj. 16	Replay Boost	Set to YES or NO . When set to YES , exceeding a replay will set a temporary replay level for each time a replay level is surpassed. This new level will equal the previous replay level (when the replay was awarded) plus 50 Million for each following game, until the replays have all been played. At this time the previous level is resumed.
Adj. 17	Credit Limit	Adjust the maximum number of credits that may be posted; 4 to 50 .
<p>There are four of the six high score levels with associated player initials that are displayed during the attract mode. This provides a high-score-to-date feature. When players exceed these levels, the player initials may be entered to replace the previous ones. These levels may be adjusted to award credits and to be reset to backup values after a selected number of games.</p>		
Adj. 18	Allow High Scores	Set to enable or disable the four high score levels; 00 .
Adj. 19	Credits for High Score #1	Adjust the number of credits (0 to 4) awarded for exceeding level 1 (the highest of the four levels).
Adj. 20	Credits for High Score #2	Adjust the number of credits (0 to 3) awarded for exceeding level 2.
Adj. 21	Credits for High Score #3	Adjust the number of credits (0 to 2) awarded for exceeding level 3.
Adj. 22	Credits for High Score #4	Adjust the number of credits (0 to 1) awarded for exceeding level 4.
Adj. 23	Default High Score - 28 #1 - #6	Adjust the score level to which the world record, (level 1) (the highest of the four levels) may be altered. This adjustment is not affected by Adj. 29, <i>Reset High Score To Date</i> . Adjust the backup score to which levels 2 - 6 may be reset, respectively.
Adj. 29	HSTD Reset Count	HSTD (High Score To Date). Adjust the number of games between automatic resets of high score levels to backup settings and ball time averager adjustments; 100 to 900 or OFF (no reset or adjustment).
Adj. 30	Free Play	When set to YES , no coins are required for games.

Additional Generic Features Continued

Adj.#	Adjustment Name	Adjustment Definition
Adj. 31	Custom Message	When desired, this function is used to establish a custom message periodically displayed during the attract mode. Set the feature to CHANGE using the Credit button and depress STEP . The letter A is indicated in the first position in the display. Vary the letter by operating the left and right flippers. With the desired letter indicated, depress the CREDIT button to lock in the letter and advance to the next character. Repeat this procedure until the desired message is completed in the display. Press the STEP push-button switch to advance to Attract Mode Music (Adj. 32).
Adj. 32	Attract Mode Music	Set to ON or OFF .
Adj. 33	Flash Lamp Power	Set to NORMAL , DIM or OFF . When set to NORMAL the Flash Lamps are active, when DIM the Flash Lamps impulse power is reduced by 25% and when OFF the Flash Lamps do not flash.
Adj. 34	Coil Pulse Power	Set to NORMAL , HARD or SOFT . When HARD the coil pulse power is increased by 12.5% of the normal pulse rate. When set to SOFT the coil pulse power is reduced by 12.5% of the normal pulse rate. These adjustments are provided to compensate for Low Line or High Line voltage conditions where the solenoids appear to kicking too weak or too hard.
Adj. 35	Proprietary	Provides information to the game designer to aid in design development (not for consumer use).
Adj. 36	Next Game Promotion	Set to ON or OFF . When set to ON , the game, in attract mode will randomly display a short promotion for our next game. When set to OFF , the game in attract mode will not generate any sounds or graphics referring to the next game.
Adj. 37	Buyin Type	Set to Extra-Ball Buyin . When set to EB Buyin , the game is set to Extra Ball Buyin. When set to Feature Buyin , the game is set to Game Buyin. Set to OFF to make Buyin Type inoperative.
Adj. 38	Extra Ball Buyin Count	1, 0 or UNLIMITED . Default is 1 . Allows the operator to adjust the number of Extra Ball (EB) Buyins allowed after normal game play. See page 5 Extra Ball (EB) Buyin Feature.
Adj. 39	Game Restart	Set to YES or NO . When set to YES , a new game may be started during any ball after the first ball is completed. (Note-Pressing start during the first ball will add additional players.) When set to NO , the game disables the start button after the first ball until the final ball is in play.
Adj. 40	Extra Ball Percentage	Set from 0 to 50 . Allows the operator to adjust how frequently the Extra Ball feature is made available to the player.
Adj. 41	Background Music Volume	Set to 0, 25, 50, 75 or 100 percent. Allows the operator to adjust the background music volume independently from the normal game sounds.
Adj. 42	Bill Validator	Set to YES or NO . When set to YES , the display, in game attract mode, will show an " <i>Insert Bill Animation</i> ". When set to NO , the display, in game attract mode will show " <i>Insert Coin Animation</i> ".

Additional Generic & Game Specific Features (Adj. 45-48)

Adj.#	Adjustment Name	Adjustment Definition
Adj. 43	Tournament Mode	Set to NONE, PINBALL EXPO, IFPA-PAPA or HOME . This function determines the default conditions to quickly prepare a game for tournament play. When this setting is changed all audits will be reset and all adjustments will be initiated to the particular style selected. The game will then return to game over attract mode, as if a Factory Restore had been performed. NONE - Same as a Factory Reset conditions. IFPA -Straight 50¢ play, no replay, no Extra Ball, no High Scores, 2 Tilt Warnings and No Match. PINBALL EXPO-PAPA - Same as IFPA settings except Free Play is enabled. HOME -Sets game for Free Play, extra ball play, no replay, 10% Match & Extra Ball percent 30% .
Adj. 44	External Replay Kicker	Set to ON or OFF . When set to ON , the operator can enable the kicker in the cabinet to drive an external device without the game giving a replay.
Adj. 45	Special Memory	Set to YES or NO . When set to YES , the lit 'Special' light will be retained in memory from ball to ball for the same player. When set to NO , the lit 'Special' light will go out at the end of each ball.
Adj. 46	Laser Kick Criterion	Determines how the Laser Kick can be reset during game play.
Adj. 47	Discard Count	Provides the operator with the total number of discard cards.
Adj. 48	Player Wins 21 on Tie	Set to YES or NO . When set to YES , the player wins 21 on a tie.
Adj. 49	Multiball Restart	Set to EXEASY, EASY, MODERATE, HARD or EXHARD . Default is EASY . Determines how Multiball can restart.
Adj. 50	Qualify Jackpot	Determines how the Jackpot is lit.
Adj. 51	Multiball Difficulty	Determines how Multiball Difficulty is achieved.
Adj. 52	Extra Ball Memory	Set to YES or NO . When set to YES , the lit 'Extra Ball' light will be retained in memory from ball to ball for the same player. When set to NO , the lit 'Extra Ball' light will go out at the end of each ball.
Adj. 53	Ramp Memory	Set to YES or NO . When set to YES , the 'Completed Number of Ramps' will be retained in memory from ball to ball for the same player to achieve set awards. When set to NO , the 'Completed Number of Ramps' will be reset at the end of each ball.
Adj. 54	Qualifying Lock Rule	Set to EXEASY, EASY, MODERATE, HARD or EXHARD . Default is EASY . Determines the number of Ramps needed to lite Lock(s).
Adj. 55	Software Meter	Provides the operator with the total number of Meter Clicks.
Adj. 56 Adj. 57	Location ID & Game ID	0 to 9999 . Allows the operator to assign a location or game identification (respectively) number to the audit print-out sheet. (Will not be affected by Factory Restore.)
Adj. 58	Reset Printer?	Provides the operator with the ability to reset the printer option.
Adj. 59	Printer Interface	Allows the operator to print by pressing the Start Button.
Adj. 99	Factory Restore	Allows the operator to reset all adjustments to the factory settings.

GAME DIAGNOSTICS

Please note: If the Display Reads "OPEN THE DOOR," this indicates a faulty memory condition in RAM. Opening the Coin Door will initiate a Factory Restore, by opening the Memory Protect Switch. Check battery voltage at CMOS RAM with power off.

The Data East Pinball system provides tests for sounds, digital displays, lamps, switches, and solenoids. Each feature may be tested manually or automatically using the **STEP** and **FORWARD/REVERSE** push-button switches inside the coin door and the white "Clear Ticket" button located next to the Diagnostic Switches. The automatic tests may be used for a quick verification of automatic test functions and the manual tests, for troubleshooting.

During game play, activation of switches and operation of coils with associated switches are monitored. If a switch is not made for 50 games it is considered faulty. When operation of a coil should close or open a switch and does not, the coil is considered faulty. In Game Over Attract Mode, faulty switches and coils (if any) are reported (See Tech Alert description below). Note that reporting of an unused switch does not constitute a problem and that a bad coil could mean that the associated switch requires adjustment.

Wiring to switches, solenoids and controlled lamps uses color-coded wires that basically follows a resistor color-code scheme for the eight rows and eight columns. During the switch tests and during the discrete lamp test, identification of the color of the row and column wires are indicated in the Dot Matrix Display. For example, making the right coin switch during the Switch Test results in the switch functional name (RIGHT COIN), the row (WHT-YEL) and column (GRN-BRN) wire color codes, and the switch number are shown in the display.

Color Abbreviations Used:

0	BLK = BLACK	3	ORN = ORANGE	6	BLU = BLUE	9	WHT = WHITE
1	BRN = BROWN	4	YEL = YELLOW	7	VIO = VIOLET		
2	RED = RED	5	GRN = GREEN	8	GRY = GREY		

Additional Abbreviations/Acronyms Used:

X	"Times" (Multiplier)	P/F	Playfield	D.T.	Drop Target(\$)
LT	Left	S-U	Stand-Up (Targets)	PPB	Playfield Power Board
RT	Right	Au.	Audit(\$)	SSFB	Solid State Flipper Board
BOT	Bottom	Adj.	Adjustments	PSB	Power Supply Board
MID	Middle	G.I.	General Illumination	SMB	Shaker Motor Board
CT	Center	R/O	Roll-Over (Switches)	N.C.	"Normally Closed"

Entering Diagnostics

With the game in the game-over mode, open the coin door and make sure that the **FORWARD/REVERSE** push-button switch is set to **REVERSE** (down) and depress the **STEP** push-button switch. The Player displays will show the toll-free Customer Service number 1-800-KICKERS, that is 1-800-542-5377 (U.S. including Illinois) and the toll number (708) 345-7700 (Outside the United States). This indicates entry into game diagnostics.

Service Credits

With the phone number displayed depress the **STEP** push-button switch. The game now gives the technician the option of adding 1 to 5 service credits. These credits allow the technician to test-play the game without adding any counts to the coin audits (Au. 01 & Au. 05 - 08). When the message appears, press and hold the Game Start pushbutton until the desired number of credits are shown on the display. Then press the step button again to add these credits to the game and enter Tech Alert. If no Service Credits are desired, press the step button with the initial message displayed.

Tech Alert

The display will now indicate if there are any faulty switches (i.e., Switches that are normally closed but remain open or open switches that have not been closed (activated) in 50 games.

Easy Trough Clear

Pressing the step button again displays the **EASY TROUGH CLEAR** message and instructs the technician to operate either flipper button to easily remove the balls from the trough. This is provided to allow the technician a simple method of removing the balls from the trough prior to entering the Active Switch Test, thereby reducing the number of switches closed. Also, to test functionality of trough, ensure proper trough operation.

Burn-In Minutes

Pressing the step button while in Tech Alert mode will step game into Burn-in Mode (Factory use). At this stage pressing the game start button will cause the game to exercise all CPU I/O functions. This is provided to constantly exercise sounds, solenoids, etc...

To stop the test press the start button again. Cumulative Burn-In minutes will be displayed. To reset Burn-In minutes to 00, you must perform an Audit Reset (Adj. 10) or a Factory Restore (Adj. 99).

Sound Tests

The Data East Pinball sound system produces true digital stereo sound on left and right speakers and mono on a center speaker. During Sound tests, the bottom display shows the sound board circuit under test and the corresponding sounds are selected by operating the left and right flipper buttons to choose the circuit to be tested. Now press the start button to initiate the sound. Refer to the Sound Test Chart for the sound circuits displayed and the sounds produced.

The sound functions allow verification that all channels are functioning properly and that the speaker connections are correct. Speaker Phase Testing procedures follow for checking speaker connections.

Sound Test Chart

Auto/Manual Tests	Sounds Produced	Auto/Manual Tests	Sounds Produced
Left Speaker	LEFT SINE	Voice Rom3 (Loc U36)	NOT USED
Both Lt & Rt Speakers	CENTER SINE	Voice Rom4 (Loc U37)	NOT USED
Right Speaker	RIGHT SINE	Music Test (Sound Rom, Loc U7)	LEVEL 1-3 MUSIC
Voice Rom1 (Loc U17)	SPEECH PATTERN 1		

Speaker Phase Testing

Connections to each of the three speakers are polarized and each must be connected appropriately for the best quality sound. If one speaker has the positive and negative connections reversed with respect to the other two, bass frequencies will not be produced properly and the overall sound quality will be poor.

To test for proper speaker phasing, use the sound test to cycle through the Left, Center, and Right Sine functions. If the Center Sine produces more volume and bass than the Left and Right Sines, the speakers are connected properly. If it produces the same or less, one speaker is connected improperly. To isolate and correct reversed speaker connections, one of two methods may be used.

1. Check each speaker for polarity markings. If the speakers have polarity markings, verify that the single-color wire (BLK, YEL or RED) is connected to the negative (-) terminal.

2. Disconnect the speaker output connector from the Sound Board and connect a 1.5-volt battery across each speaker pair one at a time while observing the speakers. Make sure the positive battery terminal is connected to the positive lead (CN1- Pin 1, 3 or 6) each time. As the connection is made, check speaker cone movement; proper connections are indicated by outward movement.

Digital Display Test

The Digital display utilizes a Dot Matrix Display Control board mounted in piggyback fashion to the display driver Board. The purpose behind this board is to provide more information (192 X 64 Dots) to the operator as well as displaying graphics to the player.

The board is controlled by a 68B09E microprocessor and its personality ROMs (Unique to the Game) . It receives Data, Reset & Clock information from the CPU Board via the ribbon cable and sends back multiple Status and Busy signals to the CPU. This is to insure synchronized communication between the CPU and the Display Controller board.

The Drivers for the rows and columns are provided on 4 surface mounted integrated circuits on the Display driver board.

Dot Matrix Display Test

To enter Dot Matrix Display Test, operate the STEP push-button switch from the Sound Manual test. The display will immediately illuminate one vertical column of dots, turning it off and illuminating the next column, until each column has been individually lit, while the other columns are off. It will make one pass. The display will then illuminate the top horizontal row of dots, and test by lighting the row of the display, then turning it off and illuminating the next row, until each row has been individually lit, while the other rows are off. The test will then illuminate all the dots in the display, except for one column. It will cycle this blank column from left to right for one pass. The display will then again illuminate all the dots except for the top row, and then turning it on and blanking the next row, until each row has been individually blanked, while the other rows are on. It will cycle this blank row for one pass. The next test begins with every other dot lit, in both the rows and columns. These dots then go out, and the unlit dots light, resulting in an alternating checkerboard pattern for approximately 4 seconds. An intensity test is also displayed at 30%, 70% & 100% brightness. The test will repeat these cycles indefinitely until advanced to the next test or until the power is removed. (Please Note: These tests may be interrupted at any time by operating the STEP push-button switch to advance to the next test.)

Laser Kick Test

This test is provided to insure proper interaction between certain switches and their associated solenoids without entering game play. For example, by rolling the ball over the left outlane switch, the Laser Kick should fire. If it kicks too early or too late, the switch actuator should be adjusted to compensate for this error. If it fails to fire, use the switch test or coil test to help determine the cause of the failure. (Note: During this function, similar tests may be performed on the Vertical Up Kickers or Ejects in the game.)

SWITCH TESTS

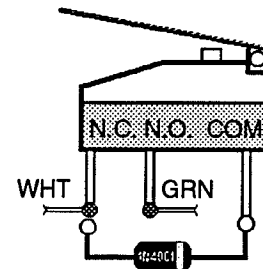
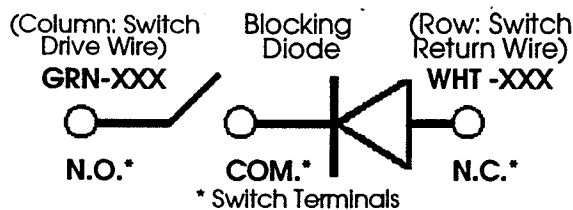
Switches are configured in an 8 x 8 matrix of columns (switch drives) and rows (switch returns) with up to 64 switches possible. The switch tests include three parts; switch test, active switches, and bad switches. Column and Row wire colors are indicated in each test using corresponding resistor color code numbers.

Switch Test

To initiate, push the STEP push-button switch, until the display indicates **SWITCH TEST**. Close each switch and observe the display. The display will indicate the switch name, column wire colors, row wire colors and the switch number. When a switch is released, the name and number disappear until another switch is closed or the test is exited.

Active Switches

Push the STEP push-button switch from the Switch Test. The display will indicate **ACTIVE SWITCHES**. If any switches are stuck closed (or made from the presence of a ball), the display sequences through switch names, and indicates the row and column wire colors, and the switch numbers are indicated in the display. This cycle continues until all switches are cleared or until the STEP push-button switch is depressed.



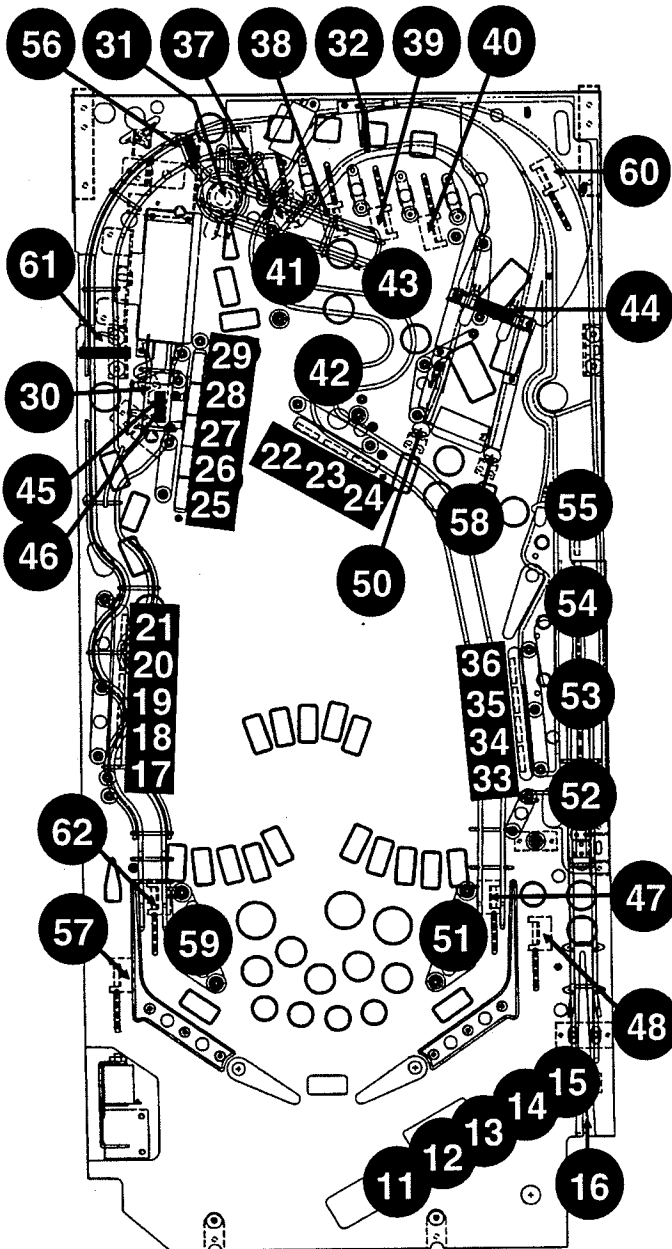
Diode 1N4001

SWITCH MATRIX CHART

Column (Drive) / Row (Return)	1 Q55 GRN-BRN CN8-1	2 Q54 GRN-RED CN8-2	3 Q53 GRN-ORN CN8-3	4 Q52 GRN-YEL CN8-4	5 Q51 GRN-BLK CN8-5	6 Q50 GRN-BLU CN8-7	7 Q49 GRN-VIO CN8-8	8 Q48 GRN-GRY CN8-9
1 WHT-BRN CN10-9	Plumb Tilt 1	Not Used 9	Lower Left 5-Bank D.T. Bottom 10♠ 17	Upper Left 5-Bank R/O D.T. Bottom 3♠ 25	Right 4-Bank D.T. Bottom 9♠ 33	Left Turbo Bumper 41	Right Outlane 49	Left Outlane 57
2 WHT-RED CN10-8	4th Coin 2	Not Used 10	Lower Left 5-Bank D.T. Lwr. Middle J♠ 18	Upper Left 5-Bank R/O D.T. Lwr. Mid. 4♠ 26	Right 4-Bank D.T. Lwr. Middle 9♠ 34	Center Turbo Bumper 42	Right Ramp Left S-U Target 50	Right Ramp Right S-U Target 58
3 WHT-ORN CN10-7	Credit Button 3	#1 (Left) Ball Trough 11	Lower Left 5-Bank D.T. Middle Q♠ 19	Upper Left 5-Bank R/O D.T. Middle 5♠ 27	Right 4-Bank D.T. Up. Middle 9♠ 35	Right Turbo Bumper 43	Right Slingshot 51	Left Slingshot 59
4 WHT-YEL CN10-6	Right Coin 4	#2 Ball Trough 12	Lower Left 5-Bank D.T. Up. Middle K♠ 20	Upper Left 5-Bank R/O D.T. Up. Mid. 6♠ 28	Right 4-Bank D.T. Top 9♥ 36	Right Ramp Enter Gate 44	RT Ramp Kick Big Bottom 52	Right Orbit Roll-over Sw. 60
5 WHT-GRN CN10-5	Center Coin 5	#3 Ball Trough 13	Lower Left 5-Bank D.T. Top A♠ 21	Upper Left 5-Bank R/O D.T. Top 7♠ 29	Top Lane Left 37	Paddle Wheel Front Lock OPTO 45	RT Ramp Skill Shot 1 53	Left Orbit Rollunder 61
6 WHT-BLU CN10-3	Left Coin 6	#4 Ball Trough 14	Center 3-Bank D.T. Left 8♠ 22	Captive Ball S-U Target 30	Top Lane MID LT 38	Paddle Wheel Back Lock OPTO 46	RT Ramp Skill Shot 2 54	Left Return Lane 62
7 WHT-VIO CN10-2	Slam Tilt 7	#5 (Right) Ball Trough 15	Center 3-Bank D.T. Middle 8♦ 23	VUK 31	Top Lane MID RT 39	Right Return Lane 47	RT Ramp Skill Shot 3 55	Left Flipper Lower 63
8 WHT-GRY CN10-1	Extra Ball Button 8	Shooter Lane 16	Center 3-Bank D.T. Right 8♥ 24	Upper RT Ramp Exit Gate 32	Top Lane Right 40	Not Used 48	Paddle Wheel Entrance (on P/F) OPTO 56	Right Flipper Up. / Lwr. 64

Switch Matrix Locations, Descriptions & Switch Part Numbers†

Switch Matrix No. & Description	Part No.
01* Plumb Tilt (See Item 17, Cabinet Parts, Page 41)	
02* 4th Coin (On Coin Door)	---
03* Credit Button (Left of Coin Door)	500-5097-02
04* Right Coin (On Coin Door)	180-5024-00
05* Center Coin (On Coin Door)	180-5024-00
06* Left Coin (On Coin Door)	180-5024-00
07* Slam Tilt	180-5022-00
08* Extra Ball Button (Under 03)	180-5073-00
09 Not Used	---
10 Not Used	---
11 #1 (Left) Ball Trough	180-5119-00
12 #2 Ball Trough	180-5119-00



Switch Matrix No. & Description	Part No.
13 #3 Ball Trough	180-5119-00
14 #4 Ball Trough	180-5119-00
15 #5 (Right) Ball Trough	180-5118-00
16 Shooter Lane	180-5100-01
17 Lower Left 5-Bank D.T. Bottom 10♣	180-5104-00
18 Lower Left 5-Bank D.T. Lwr. MID J♣	180-5104-00
19 Lower Left 5-Bank D.T. Middle Q♣	180-5104-00
20 Lower Left 5-Bank D.T. Upr. MID K♣	180-5104-00
21 Lower Left 5-Bank D.T. Top A♣	180-5104-00
22 Center 3-Bank D.T. Left 8♣	180-5104-00
23 Center 3-Bank D.T. Middle 8♦	180-5104-00
24 Center 3-Bank D.T. Right 8♥	180-5104-00
25 Upr. LT 5-Bank Rollover D.T. BOT 3♣	180-5104-00
26 Upr. LT 5-Bank R/O D.T. Lwr. MID 4♣	180-5104-00
27 Upr. LT 5-Bank R/O D.T. Middle 5♦	180-5104-00
28 Upr. LT 5-Bank R/O D.T. Upr. MID 6♣	180-5104-00
29 Upr. LT 5-Bank Rollover D.T. Top 7♣	180-5104-00
30 Captive Ball Stand-Up Target	515-5967-08
31 Vertical Up-Kicker (VUK)	180-5116-00
32 Upper Right Ramp Exit Gate	180-5087-00
33 Right 4-Bank Drop Target Bottom 9♣	180-5104-00
34 Right 4-Bank D.T. Lower Middle 9♦	180-5104-00
35 Right 4-Bank D.T. Upper Middle 9♣	180-5104-00
36 Right 4-Bank Drop Target Top 9♥	180-5104-00
37 Top Lane Left	500-5707-00
38 Top Lane Middle Left	500-5707-00
39 Top Lane Middle Right	500-5707-00
40 Top Lane Right	500-5707-00
41 Left Turbo Bumper	180-5015-01
42 Center Turbo Bumper	180-5015-01
43 Right Turbo Bumper	180-5015-01
44 Right Ramp Entrance Gate	180-5090-00
45 Paddle Wheel Transmitter Front Lock OPTO Receiver	520-5102-00 520-5103-00
46 Paddle Wheel Transmitter Back Lock OPTO Receiver	520-5102-00 520-5103-00
47 Right Return Lane	500-5706-00
48 Not Used	---
49 Right Outlane	500-5706-00
50 Right Ramp Left Stand-Up Target	515-5967-08
51 Right Slingshot	180-5054-00
52 Right Ramp Kick Big Bottom	500-5706-00
53 Right Ramp Skill Shot 1	500-5706-00
54 Right Ramp Skill Shot 2	500-5706-00
55 Right Ramp Skill Shot 3	180-5126-00
56 Paddle Wheel Transmitter Entrance OPTO Receiver	520-5102-00 520-5103-00
57 Left Outlane	500-5707-00
58 Right Ramp Right Stand-Up Target	515-5967-08
59 Left Slingshot	180-5054-00
60 Right Orbit Rollover	500-5707-00
61 Left Orbit Rollover	180-5090-00
62 Left Return Lane	500-5707-00
63* Lower Left Flipper Cabinet via Q7 (Transistor) on SSFB	180-5124-00
64* Lower & Upper Right Flipper Cabinet via Q5 (Transistor) on SSFB	180-5124-00

* Location - In Cabinet

† Specify Game N^o (31) & decal description if applicable.

LAMP TESTS

Controlled lamps are configured in an 8 x 8 matrix of columns (lamp drives) and rows (lamp returns) with up to 64 lamps possible. The lamp tests include four parts, all lamps, lamp return (row), lamp drive (column), and discrete (individual) lamps. Row and column wire colors are indicated in the discrete lamp test using corresponding resistor color code numbers.

All Lamps

From the Active Switch test, operate the STEP push-button switch. The dot matrix display will indicate ALL LAMPS and all controlled lamps will light.

Lamp Returns (Row)

From the ALL LAMPS test, depress the STEP push-button switch. The display indicates LAMP RETURNS, wire color and the LAMP RETURN driver transistor. All controlled lamps in row 1 should be lit. Operating the Game Start push-button switch cycles through each of the rows separately.

Lamp Drives (Column)

From the LAMP RETURNS test, depress the STEP push-button switch. The display will indicate LAMP COLUMNS, wire color and the LAMP DRIVES driver transistor. All controlled lamps in column 1 should be lit. Operating the Game Start push-button switch, cycles through each of the columns separately.

Single Lamp

From the LAMP DRIVES test, depress the STEP push-button switch. The display will indicate the lamp name. The display indicates the row and column wire colors and the lamp matrix number. Lamp 01 should light. With the FORWARD/REVERSE push-button switch in the FORWARD (up) position, operating the Game Start push-button switch selects higher-numbered lamps; with it in the REVERSE (down) position, Game Start selects lower-numbered lamps.

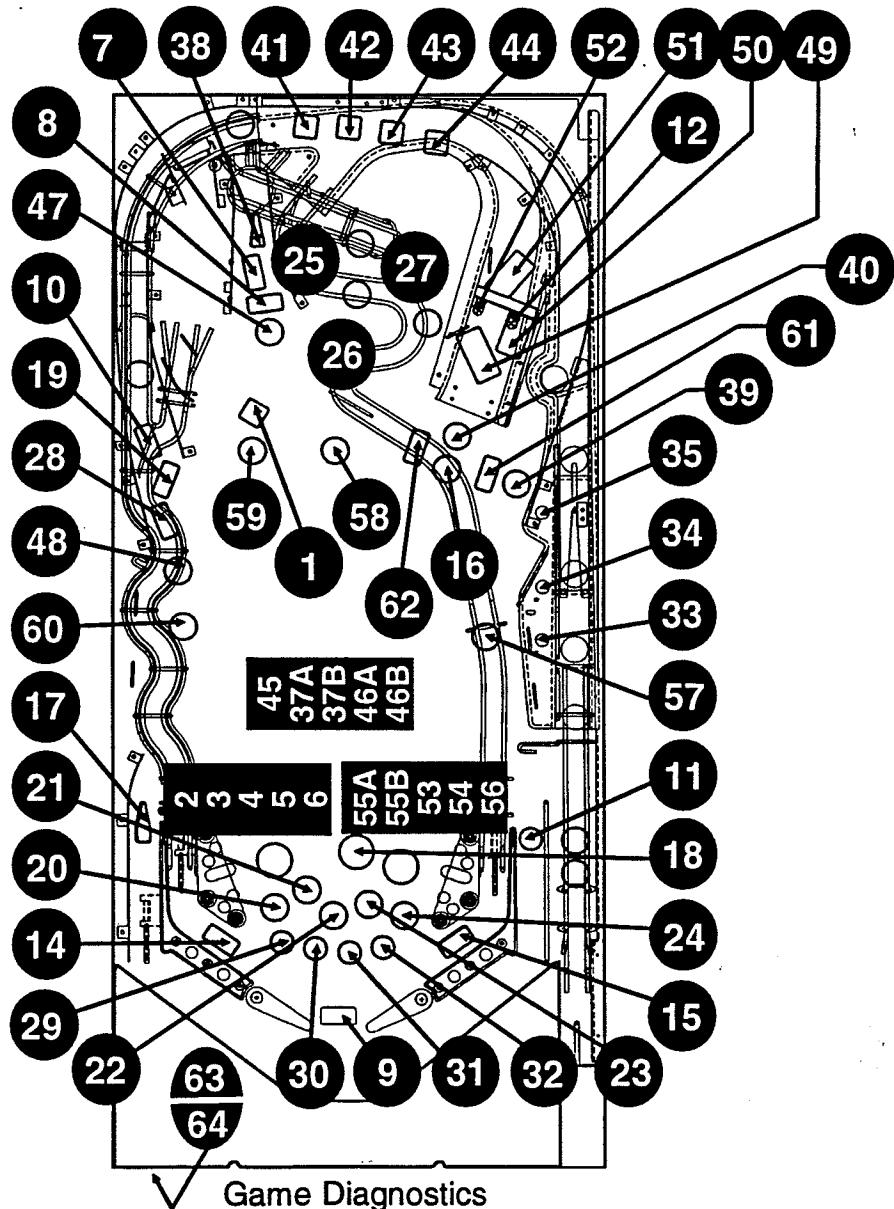
LAMP MATRIX CHART

Column 18V Row GND	1 Q71 YEL-BRN CN7-1	2 Q70 YEL-RED CN7-2	3 Q69 YEL-ORN CN7-3	4 Q68 YEL-BLK CN7-4	5 Q67 YEL-GRN CN7-6	6 Q66 YEL-BLU CN7-7	7 Q65 YEL-VIO CN7-8	8 Q64 YEL-GRY CN7-9
1 Q72 RED-BRN CN6-1	Bank Helst (Captive Ball) 01	Shoot Again 09	21 (When Lit) 17	(Left) Turbo Bumper 25	Skill Shot #1 Bottom 33	Top Lane 1 ♣ 41	Ramp Joker #1 (Bottom) 49	4-Of- A-Kind 57
2 Q73 RED-BLK CN6-2	Two of Hearts 2♥ 02	Lock #3 ♣ 10	Poker Champion- ship 18	(Center) Turbo Bumper 26	Skill Shot #2 34	Top Lane 2 ♦ 42	Ramp Joker #2 (Middle) 50	3-Of- A-Kind 58
3 Q74 RED-ORN CN6-3	Three of Hearts 3♥ 03	Special 11	Lock #2 ♣ 19	(Right) Turbo Bumper 27	Skill Shot #3 35	Top Lane 3 ♠ 43	Ramp Joker #3 (Top) 51	Straight 59
4 Q75 RED-YEL CN6-5	Four of Hearts 4♥ 04	Jackpot (Right Ramp Enter Right) 12	Coop's Cash 20	Lock #1 ♣ 28	Not Used 36	Top Lane 4 ♥ 44	Stagecoach (Right Ramp Enter Left) 52	Royal Flush 60
5 Q76 RED-GRN CN6-6	Five of Hearts 5♥ 05	Not Used 13	Lauren Belle 21	5 Mill (1) (Left) 29	10 of Clubs / Diamonds 10♣ 10♦ 37	Ace of Spades A♠ 45	Seven of Clubs 7♣ 53	Two of Diamonds S-U 2♦ 61
6 Q77 RED-BLU CN6-7	Six of Hearts 6♥ 06	Spot Card (Left) 14	Bank Helst 22	5 Mill (2) (Middle Left) 30	Extra Ball 38	10 of Spades / Hearts 10♠ 10♥ 46	Seven of Diamonds 7♦ 54	Two of Clubs S-U 2♣ 62
7 Q78 RED-VIO CN6-8	Jack of Spades J♠ ('21') 07	Spot Card (Right) 15	Angel's Revenge 23	5 Mill (3) (Middle Right) 31	\$ (Right Orbit) (#4) 39	\$ (VUK) (#2) 47	Six of Clubs / Diamonds 6♣ 6♦ 55	Extra Ball Button 63
8 Q79 RED-GRY CN6-9	Raise/ Fold 08	1 (One) Pair 16	Stage Coach 24	5 Mill (4) (Right) 32	\$ (Ramp Enter) (#3) 40	\$ (Left Orbit) (#1) 48	Seven of Hearts 7♥ 56	Start Button 64

Lamp Matrix Location and Descriptions

Lamp Matrix No. & Description		Lamp Matrix No. & Description		Lamp Matrix No. & Description	
01	Bank Heist (Captive Ball)	24	Stage Coach	46A	Ten of Spades 10♠
02	Two of Hearts 2♥	25	(Left) Turbo Bumper	46B	Ten of Hearts 10♥
03	Three of Hearts 3♥	26	(Center) Turbo Bumper	47	\$ (VUK) (#2)
04	Four of Hearts 4♥	27	(Right) Turbo Bumper	48	\$ (Left Orbit) (#1)
05	Five of Hearts 5♥	28	Lock #1 (Joker)	49	Ramp Joker #1 (Bottom)
06	Six of Hearts 6♥	29	5 Mil (1) (Left)	50	Ramp Joker #2 (Middle)
07	Jack of Spades J♠ ('21')	30	5 Mil (2) (Middle Left)	51	Ramp Joker #3 (Top)
08	Raise / Fold	31	5 Mil (3) (Middle Right)	52	Stagecoach (Right Ramp Enter Left)
09	Shoot Again	32	5 Mil (4) (Right)	53	Seven of Clubs 7♣
10	Lock #3 (Joker)	33	Skill Shot #1 (Bottom)	54	Seven of Diamonds 7♦
11	Special	34	Skill Shot #2 (Center)	55A	Six of Clubs 6♣
12	Jackpot (RT Ramp Enter Right)	35	Skill Shot #3 (Top)	55B	Six of Diamonds 6♦
13	Not Used	36	Not Used	56	Seven of Hearts 7♥
14	Spot Card (Left)	37A	Ten of Clubs 10♣	57	4-Of-A-Kind
15	Spot Card (Right)	37B	Ten of Diamonds 10♦	58	3-Of-A-Kind
16	1 (One) Pair	38	Extra Ball	59	Straight
17	21 When Lit	39	\$ (Right Orbit) (#4)	60	Royal Flush
18	Poker Championship	40	\$ (Ramp Enter) (#3)	61	Two of Diamonds 2♦ (Stand-Up Right)
19	Lock #2 (Joker)	41	Top Lane 1 ♣	62	Two of Clubs 2♣ (Stand-Up Left)
20	Coop's Cash	42	Top Lane 2 ♦	63*	Extra Ball Button (Front of Cab.)
21	Lauren Belle	43	Top Lane 3 ♠	64*	Start Button (Front of Cabinet)
22	Bank Heist	44	Top Lane 4 ♥		
23	Angel's Revenge	45	Ace of Spades A♠		

Please Note:
General Illumination (G.I.)
Lamps are not shown.
For Bulb Types & Sockets,
see pages 46 & 47

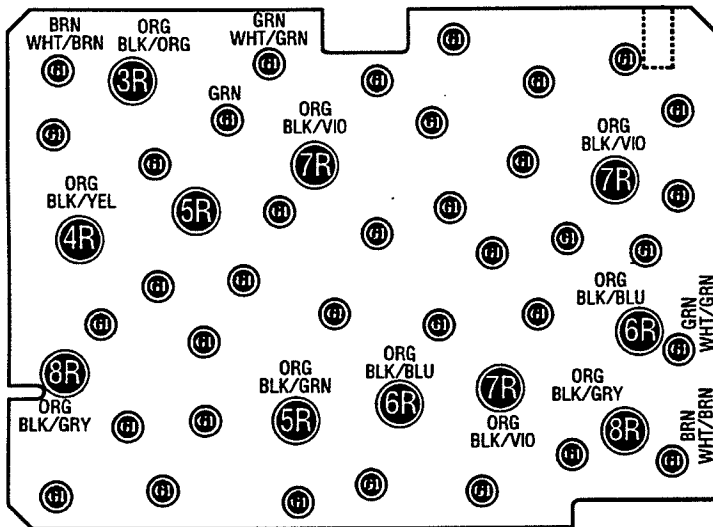


FLASH LAMP / COIL TESTS

Twenty-Two regular (pulsed under microprocessor control) coil drivers are provided to switch ground to coils. The Left/Right relay is used in conjunction with drives 1 through 8 to switch +32 volts between coils or flash lamps; these sets are termed "left" and "right". This relay is located on the PPB board which provides isolation diodes and current limiting resistors. This effectively provides 29 regular coils.

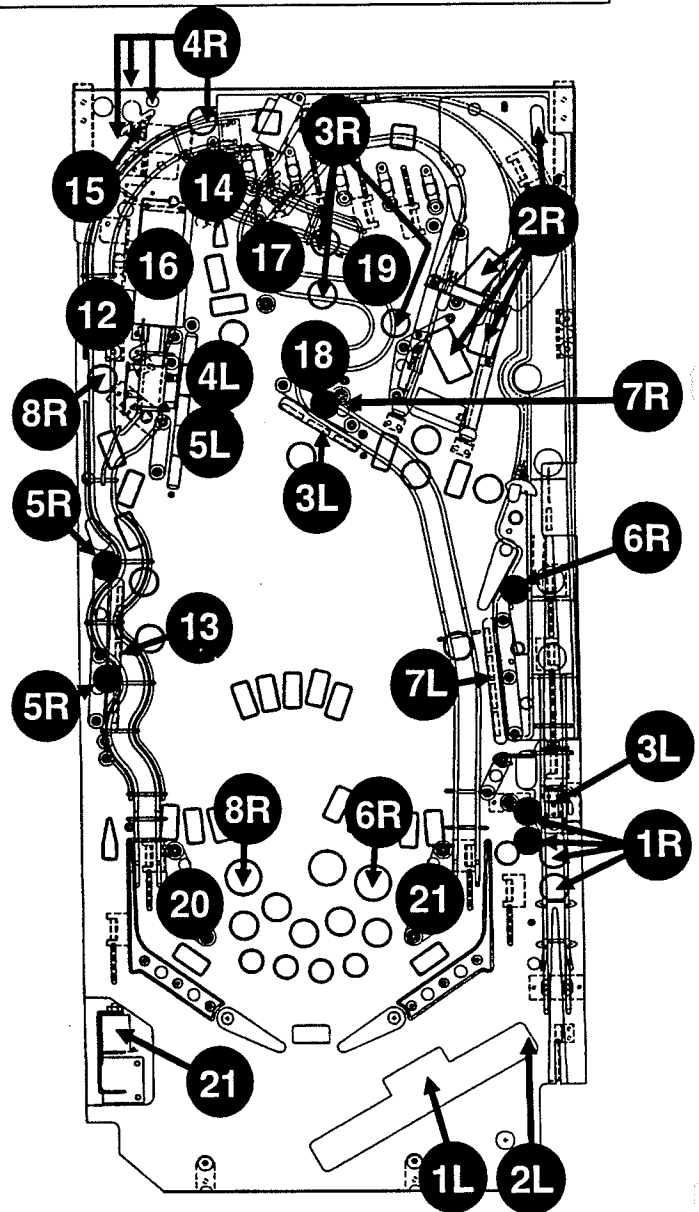
Flash Lamp	From the Single Lamp test, depress the STEP push-button switch. All Flash lamps will fire randomly. This allows the Technician to easily spot any burned out bulbs and replace them without stepping through the tests below.
Automatic Test	From the Flash Lamps test, depress the STEP push-button switch. The dot matrix display will indicate ALL COILS . The test pulses each regular solenoid or flash lamp sequentially with the coil/flash lamp names and the wire colors indicated in the display.
Select Coil	From the Coil Test, depress the STEP push-button switch. The display will indicate SELECT COIL and then the name of 1st drive and the wire colors. Operate either Flipper push-button switch to select the coil or flash lamp to be tested. With the desired drive number indicated in the display, depress the START push-button switch to cause it to be pulsed repeatedly.
Return To Game Over	From the Select Coil test, depress the STEP push-button switch once. The game returns to the game-over mode.

Backbox Flash Lamps



1L	4-Ball Ass'y Lockout	8R	Lwr. LT 5-Bank DT Flash
1R	Skill Shot Flash	09	Platic Ramp Diverter
2L	Ball Release (Eject)	10	Left/Right (A/B) Relay
2R	Jokers Flash	11	G.I. Relay
3L	Skill Shot Launch 50v	12	Ball Lock Assembly
3R	Turbo Bumpers Flash	13	5-Bank Lwr. Left D.T.
4L	5-Bank Autodrop Down	14	Upper VUK 50v
4R	Paddle Wheel Flash	15	Upr. Left Ball Deflector 50v
5L	5-Bank Autodrop Reset Up	16	Paddle Wheel
5R	Lower Left Flash	17	Left Turbo Bumper
6L	3-Bank Drop Target	18	Bottom Turbo Bumper
6R	Right Drop Target Flash	19	Right Turbo Bumper
7L	4-Bank Drop Target	20	Left Slingshot
7R	3-Bank D.T. Flash	21	Right Slingshot
8L	Knocker 32v	22	Laser Kick 50v

Note: Shaded areas not shown on Diagrams.
G.I. General Illumination Lamps

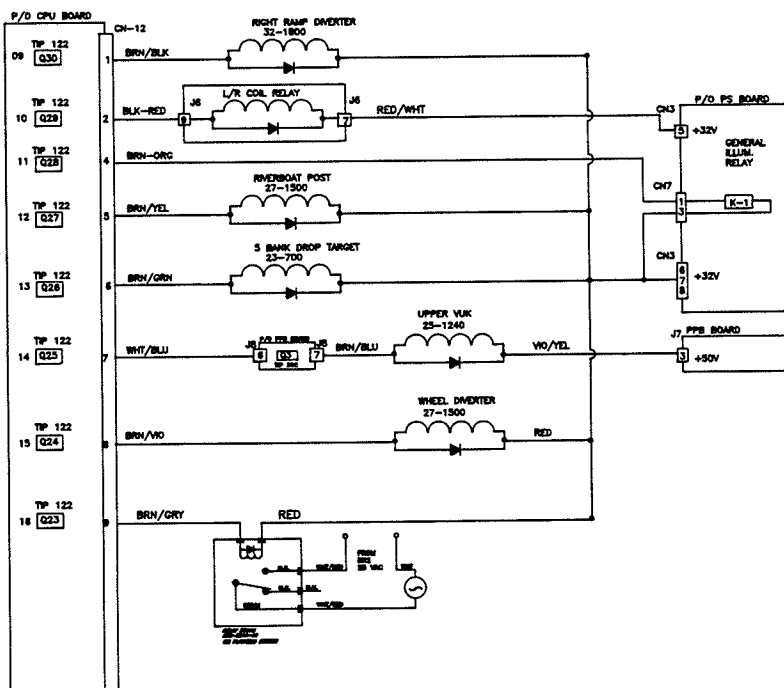
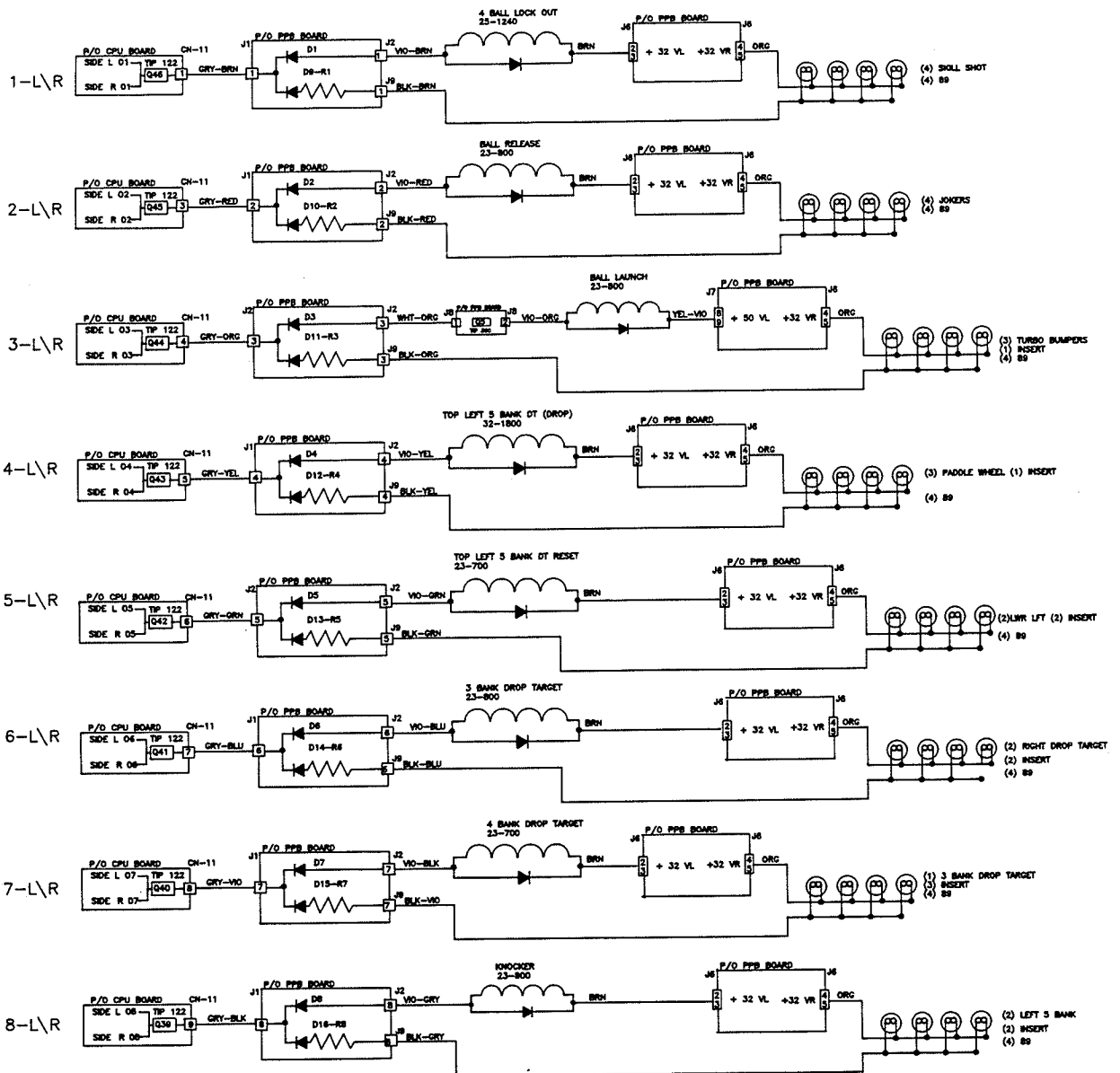


Switched, CPU Controlled Auxillary & Constant Power Solenoids

Coil No.	Coil or Flashlamp Description	Drive Transistor (D.T.)	On Which Board?	D.T. Control Line	D.T. Control Line Connect	Power Line	Power Line Connection	Power Description	Coil or Flash Type
1L	Coil: 4-Ball Assembly Lockout	Q46	CPU	VIO-BRN	PPB J2-1	BRN	PPB J6-1, 2	32v L	25-1240
1R	Flashlamp: X4 P/F, Insert X0 Skill Shot Flash			BLK-BRN	PPB J9-1	ORN	J6-4, 5	32v R	Bulb #89
2L	Coil: Ball Release (Eject)	Q45	CPU	VIO-RED	PPB J2-2	BRN	PPB J6-1, 2	32v L	23-800
2R	Flashlamp: X4 P/F, Insert X0 Jokers Flash			BLK-RED	PPB J9-2	ORN	J6-4, 5	32v R	Bulb #89
3L	Coil: Skill Shot Launch 50v	Q5	PPB	VIO-ORN	PPB J8-2	YEL/VIO	PPB J7-8	50v L	23-800
3R	Flashlamp: X3 P/F, Insert X1 Turbo Bumpers Flash	Q44	CPU	BLK-ORN	PPB J9-3	ORN	PPB J6-4, 5	32v R	Bulb #89
4L	Coil: 5-Bank Autodrop Down	Q43	CPU	VIO-YEL	PPB J2-4	BRN	PPB J6-1, 2	32v L	32-1800
4R	Flashlamp: X3 P/F, Insert X1 Paddle Wheel Flash			BLK-YEL	PPB J9-4	ORN	J6-4, 5	32v R	Bulb #89
5L	Coil: 5-Bank Drop Target	Q4	PPB	VIO-GRN	PPB J8-4	YEL/VIO	PPB J7-8	50v L	23-700
5R	Flashlamp: X2 P/F, Insert X2 Lower Left Flash	Q42	CPU	BLK-GRN	PPB J9-5	ORN	PPB J6-4, 5	32v R	Bulb #89
6L	Coil: 3-Bank Drop Target	Q3	PPB	VIO-BLU	PPB J8-7	YEL/VIO	PPB J7-8	50v L	23-800
6R	Flashlamp: X2 P/F, Insert X2 Right Drop Target Flash	Q41	CPU	BLK-BLU	PPB J9-6	ORN	PPB J6-4, 5	32v R	Bulb #89
7L	Coil: 4-Bank Drop Target	Q40	CPU	VIO-BLK	PPB J2-8	BRN	PPB J6-1, 2	32v L	23-700
7R	Flashlamp: X1 P/F, Insert X3 3-Bank Drop Target Flash			BLK-VIO	PPB J9-7	ORN	J6-4, 5	32v R	Bulb #89
8L	Coil: Knocker 32v (In Cabinet)	Q39	CPU	VIO-GRY	PPB J2-8	BRN	PPB J6-1, 2	32v L	23-800
8R	Flashlamp: X2 P/F, Insert X2 Lower Left 5-Bank D.T. Flash			BLK-GRY	PPB J9-8	ORN	J6-4, 5	32v R	Bulb #89
09	Coil: Plastic Ramp Diverter	Q30	CPU	BRN-BLK	CPU CN 12-1	RED	PS CN 3-6, 7	32v	32-1800
10	Coil: Located on PPB In Backbox Left & Right Relay	Q29	CPU	BLK-RED	CPU CN 12-5	RED	PS CN 6-7	32v	24v DC 10A DPDT
11	Coil: Located on Power Supply Bd. G.I. Relay	Q28	CPU	BRN-ORN	CPU CN 12-4	RED	PS CN 3-6, 7	32v	24v DC 10A DPDT
12	Coil: Riverboat Post Ball Lock Assembly	Q27	CPU	BRN-YEL	CPU CN 12-5	RED	PS CN 3-6, 7	32v	27-1500
13	Coil: 5-Bank Lower Left Drop Target	Q26	CPU	BRN-GRN	CPU CN 12-6	RED	PS CN 3-6, 7	32v	23-700
14	Coil: Upper VUK 50v	Q25/Q3	PPB	BRN-BLU	PPB J8-7	VIO-YEL	PPB J7-3	50v	25-1240
15	Coil: Upper Left Wheel Ball Deflector	Q24	CPU	BRN-VIO	CPU CN 12-8	RED	PS CN 3-6, 7	32v	27-1500
16	Coil: Paddle Wheel	Q23	CPU	BRN-GRY	CPU CN 12-9	RED	PS CN 3-6, 7	32v	Relay
17	Coil: Left Turbo Bumper	Q11	CPU	BLU-BRN	CPU CN 19-7	RED	PS CN 3-6	32v	23-700
18	Coil: Center Turbo Bumper	Q9	CPU	BLU-RED	CPU CN 19-4	RED	PS CN 3-6	32v	23-700
19	Coil: Right Turbo Bumper	Q8	CPU	BLU-ORN	CPU CN 19-3	RED	PS CN 3-6	32v	23-700
20	Coil: Left Slingshot	Q10	CPU	BLU-YEL	CPU CN 19-6	RED	PS CN 3-6	32v	23-800
21	Coil: Right Slingshot	Q12	CPU	BLU-GRN	CPU CN 19-8	RED	PS CN 3-6	32v	23-800
22	Coil: Laser Kick 50v	Q13/Q1	PPB	BLU-BLK	CPU CN 19-9	VIO-YEL	PS CN 3-6	50v	23-800

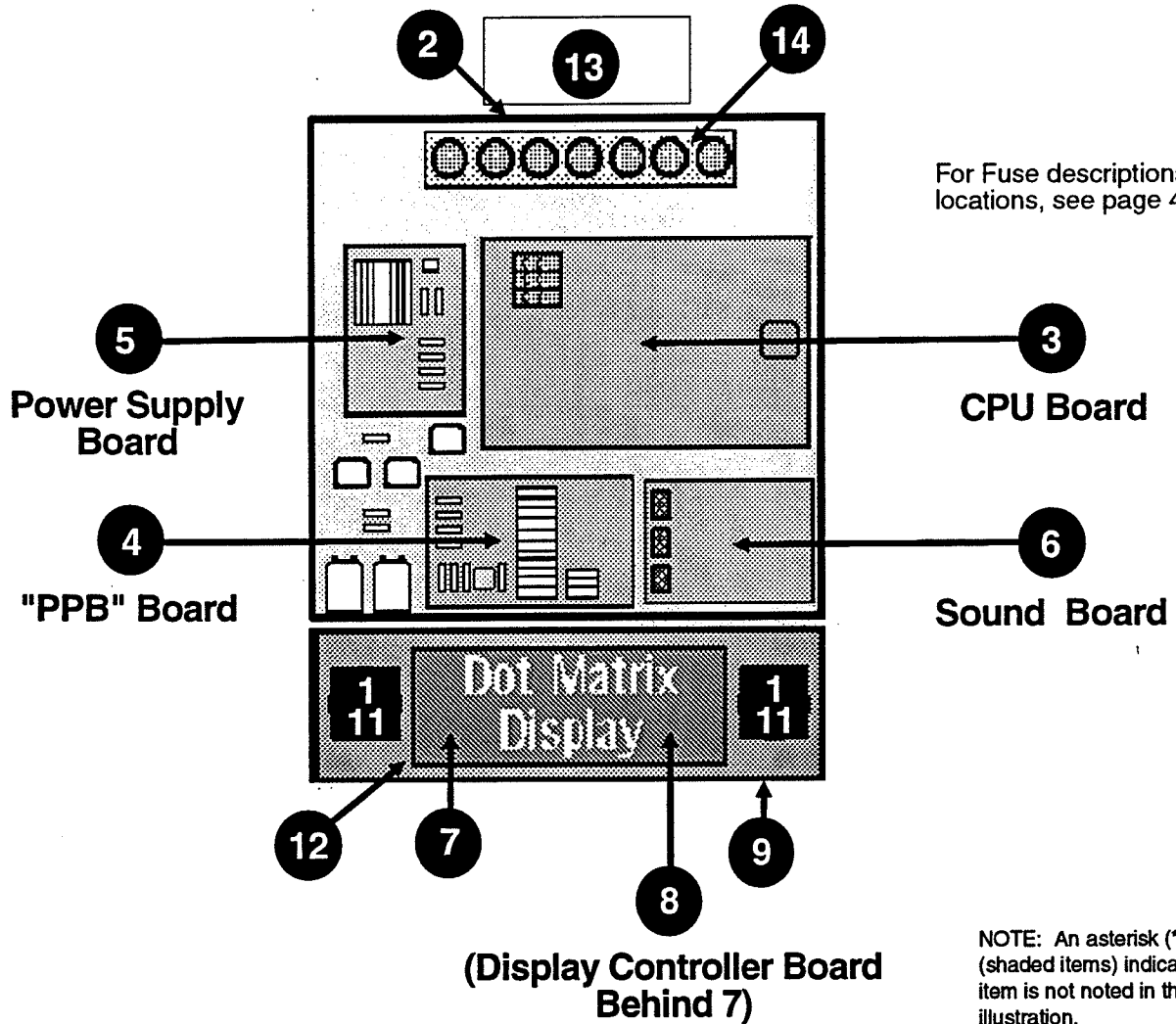
Flipper Solenoids

SSFB No.	Flipper Coil	Cabinet Switch	Switch Drive	Switch Return	E.O.S.	GND	Flipper 50vDC Power	Flipper 8vAC Hold	Flipper Coil Output
SSFB 1	Lwr. Rt. Flipper 23-900 BLU/YEL ORN/VIO	BLU-VIO SSFB CN1-7	GRN-GRY CPU CN8-9 TO SSFB CN1-4	WHT-GRY CPU CN10-1 TO SSFB CN1-3	BRN-VIO RT. EOS SW. TO CN1-1	BLK CPU CN5 TO CN1-6	BLK-WHT PPB J7-1, -5 to SSFB CN2-8, -9	GRY-GRN-GRY P/S CN1-10, -11, to SSFB CN2-7, -8	50v I 8vAC Q2, Q3, I SR1 CN2-7, 8
SSFB 1	Lwr. Lt. Flipper 23-900 GRY/YEL ORN/GRY	BLU-GRY SSFB CN1-11	GRN-GRY CPU CN8-9 TO SSFB CN1-4	WHT-VIO CPU CN10-2 TO SSFB CN1-5	BRN-GRY LT. EOS SW. TO CN1-9	BLK CPU CN5 TO CN1-6	BLK-WHT PPB J7-1, -5 to SSFB CN2-8, -9	GRY-GRN-GRY P/S CN1-10, -11, to SSFB CN2-7, -8	50v I 8vAC Q10, Q8, I SR2 CN2-4, 5
SSFB 1	Upr. Rt. Flipper 23-900 BLU/YEL ORN/GRY	GRY-VIO SSFB CN1-12	GRN-GRY CPU CN8-9 TO SSFB CN1-4	WHT-GRY CPU CN10-2 TO SSFB CN1-10	Not Used	BLK CPU CN5 TO CN1-6	BLK-WHT PPB J7-1, -5 to SSFB CN2-8, -9	GRY-GRN-GRY P/S CN1-10, -11, to SSFB CN2-7, -8	50v I 8vAC Q16, Q15, I SR3 CN2-1, 2



PARTS IDENTIFICATION

Backbox Parts

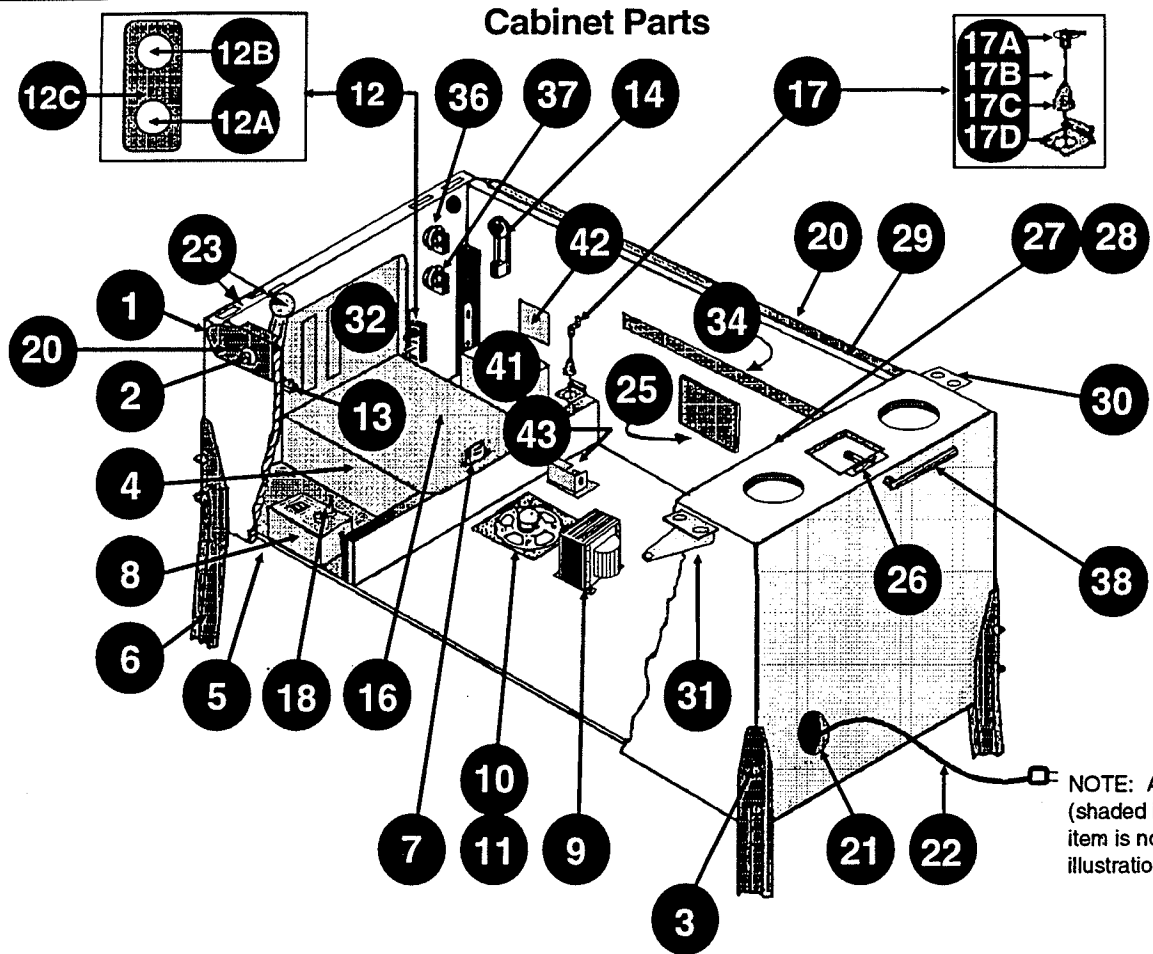


Item	Description	Part No.	Item	Description	Part No.
1	Speakers 4X4 Quam 89-9572 (X2)	031-5004-00	15 *	Static Shield *	535-6227-00
2	Back Box Lock	355-5008-00	16 *	Backglass Clear 26½" X 19¾" *	660-5018-00
3	CPU Bd. Non-Reflexive †	520-5003-04	17 *	26-7/16" Plastic Extrusion *	545-5018-08
4	PPB Board Ass'y Rev. C	520-5021-05	18 *	18¾" Plastic Extr. (Qty. 2) *	545-5018-09
5	Power Supply	520-5047-03	19 *	Glass Channel 26-7/16" *	545-5021-02
6	Sound Board 4MB 4MB †	520-5050-03	20 *	GNR Lights Insert *	525-5147-00
7	New Large Dot Matrix Display Board 192 X 64! ††	520-5075-00	21 *	Ribbon Cable, 14-Pin * Display to Display	602-5005-14
8	Display Controller Bd. †	520-5092-01	22 *	Ribbon Cable, 20-Pin * CPU to Sound Board	602-5005-20
9	Speaker Panel Assembly	500-5860-00	23 *	Ribbon Cable, 26-Pin * CPU to Display	602-5005-26
10 *	Maverick Backglass Artwork *	830-5231-00			
11	Maverick Speaker Grill ACE	830-5631-00			
	Mav. Speaker Grill BADGE	830-5631-01			
12	Mav. Speaker Plexi w/ Artwork	830-5630-00			
	Mav. Header Asm.	515-6108-00			
13	Mav. Header Cards Butyrate	830-5466-18			
14	7 Vent Hole Grill 2½" X 18"	545-5072-02			

† When ordering PC Boards with ROMS, please specify the Game Name.

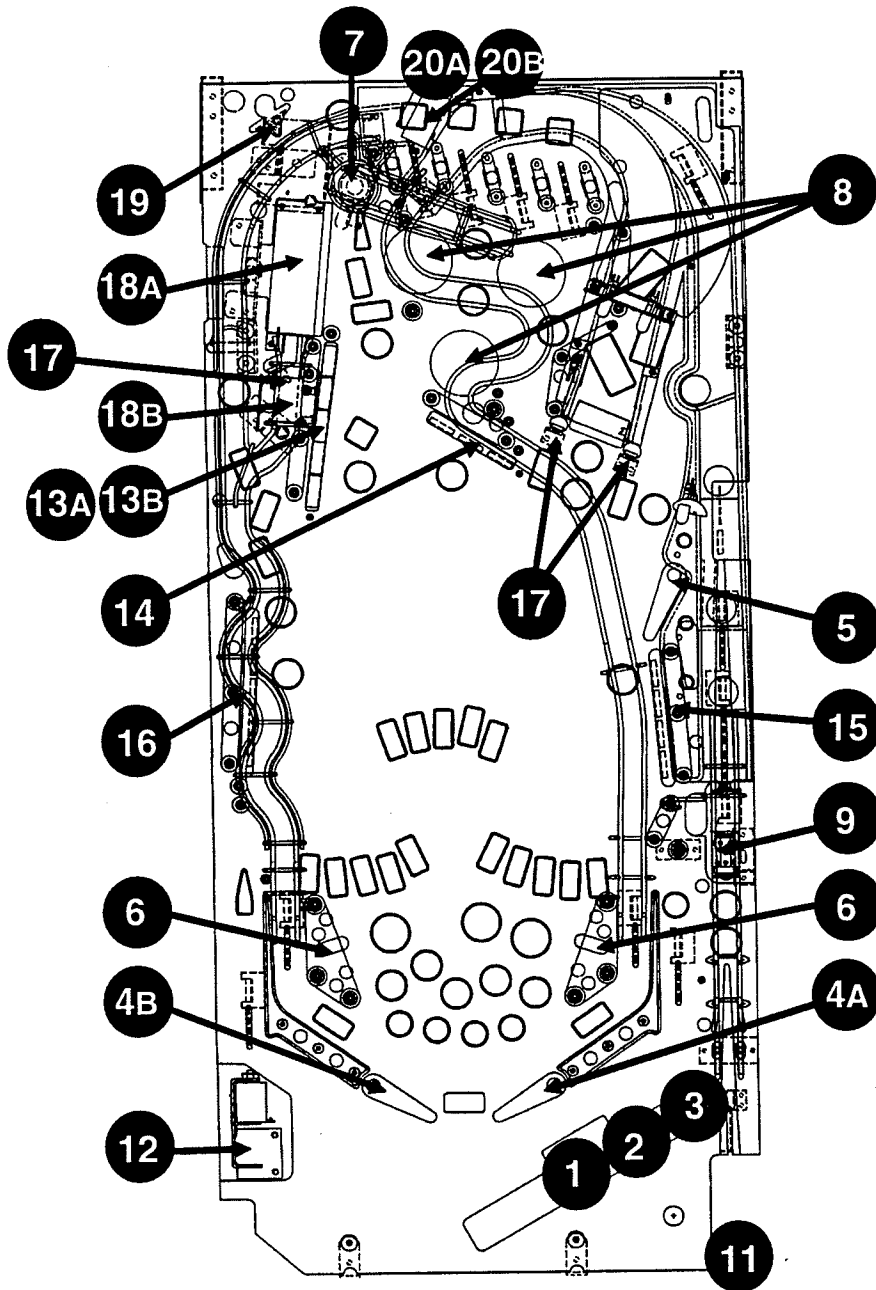
†† Indicate Manufacturer.

PARTS IDENTIFICATION



Item	Description	Part No.	Item	Description	Part No.
1	Yellow Poker Chip Shooter Assembly	500-5856-06	19 *	Playfield Glass (T.P.) 21" x 43" *	660-5001-00
2	Flipper Button Red Assy (Solid) (Qty. 2)	500-5026-32	20	Side Armor - Left & Right	535-6831-00
3	Leg Bolt (BLK) 3/8-16 x 2-3/8 Hex Hd. (Qty. 8)	231-5000-01	21	Recessed Cup for Line Cord	545-5122-00
4	Cash Box Plastic Bottom	545-5090-00	22	Line Cord 10' ROJ 3" Maximum	034-5000-10
5	Power Sw. DPST Toggle (Under Cab.)	180-5001-00	23 *	Front Molding Lockdown Assy*	500-5020-01
6	Leg (Black) (Qty. 4)	535-5020-50	24 *	Front Molding - Black *	500-5757-01
	Leg Leveler 3/8-16 x 3" (Qty. 4) *	500-5017-00	25	Solid State 3-Flipper Board (SSFB)	520-5076-00
7	Cash Box Lock Bracket	535-5215-00	26	#1 Roto Lock Male, (Female -02) *	355-5006-01
8	Service Outlet	180-5008-01	27	Rear Plastic Ext. P/F Glass 20-3/8"	545-5038-00
9	Transformer	010-5008-00	28	Mounting Fm. Rubber for Ext.	626-5001-00
10	Speaker-Round - 8"	031-5005-00	29	Plastic Channel Left & Right	545-5017-00
11	Speaker Grill 7 X 7	535-6830-00	30	Backbox Hinge Left	515-5987-00
12	Dual Switch Ass'y (Includes 12A-12C)	500-5808-00	31	Backbox Hinge Right	515-5987-01
12A	Memory Protect Switch	180-5000-00	32	Coin Door (w/Validator) USA	500-5018-17
12B	Interlock Switch	180-5136-00	33 *	Slide & Pivot Support Bracket Right*	535-5989-00
12C	Bracket	535-6958-00		Slide & Pivot Support Bracket Left	535-5990-00
13	Service Switch Set (Step Up / Down) Located on the Coin Door By Lock		34 *	Edge Slide Bracket *	535-5988-00
14	Flipper Switch, Left	180-5122-01		Playfield Support Slide Rev. A *	535-6862-00
15 *	Flipper Switch, Right (Top/Bottom)	180-5048-00	35 *	Playfield Support Bar * (Stay Arm)	535-5019-00
16	Cash Box Cover (Validator)	535-5013-03	36	Start Button Switch Ass'y (Maverick)	500-5728-05
17	Plumb Bob Tilt Ass'y (Incl. 17A-17D)	500-5023-00	37	Extra Ball Switch Ass'y (Orange)	500-5779-07
17A	Hanger Bracket (tilt)	535-5221-00	38	5/16" Hex Key Allen Wrench	777-0001-00
17B	Hanger Wire (tilt) (Attach to *17A*)	535-5319-00	39 *	Backbox/Cabinet Matrix/Fuse Info *	820-6104-03
17C	Plumb Bob (tilt) (Attach to *17B*)	535-5029-00	40 *	3-Flipper Board Cover *	545-5165-02
17D	Contact Bracket (tilt)	535-5220-00	41 *	Shaker Motor (Not Used This Game)	515-5893-00
18	Volume Control Single 10K Pot	123-5000-02	42 *	Shaker Motor P.C. Board (Not Used)	520-5065-00
			43	Knocker Assembly	500-5081-00

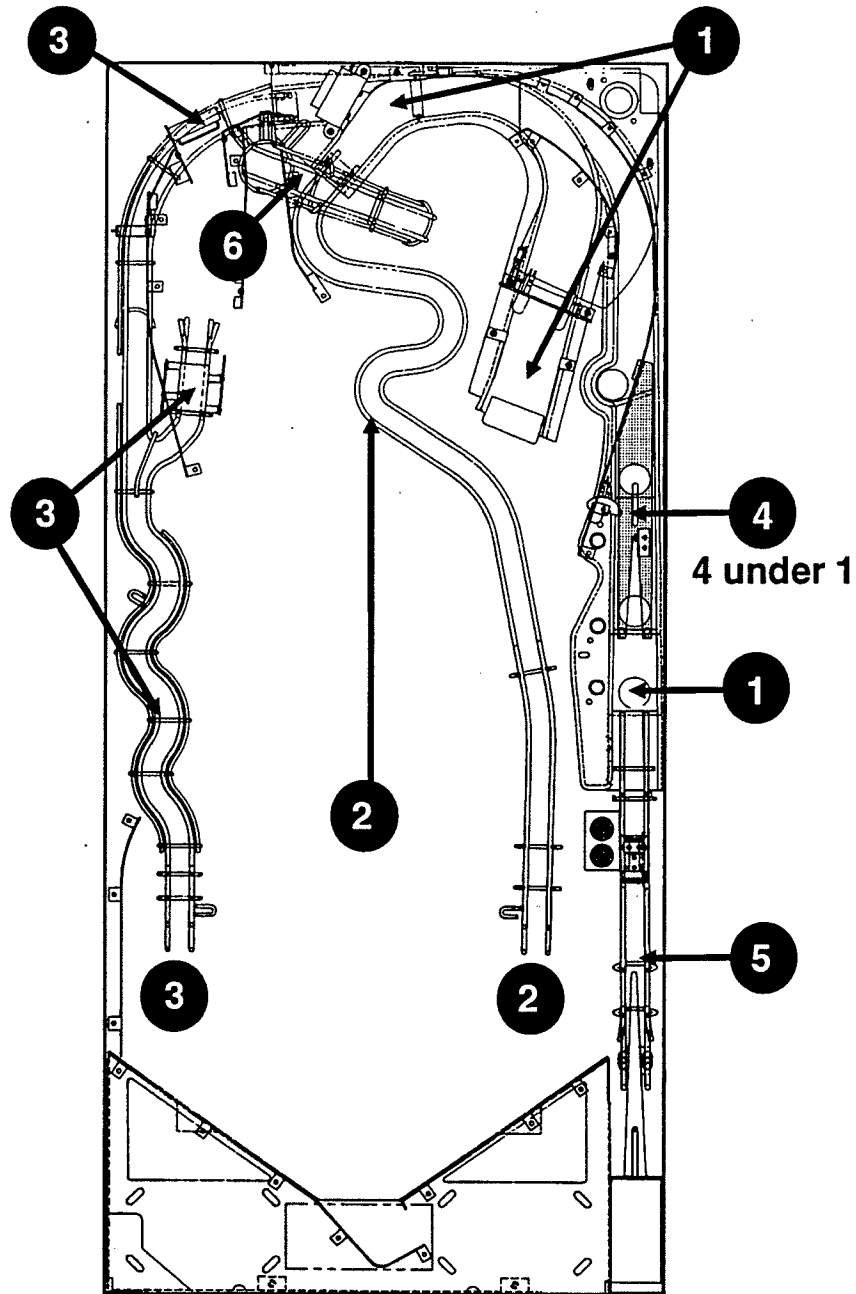
PLAYFIELD - MAJOR ASSEMBLIES †



Item	Description	Part No.	Item	Description	Part No.
1	4-Ball Sw. Asm. (Under P/F)	500-5891-00	13A	Maverick 5-Bank Special D.T.	500-5912-00
2	Lock Ball Asm. (Under Arch)	500-5684-01	13B	Autodrop Asm. (Atch. to 13A)	515-6111-00
3	Deflector for 4-Ball Asm.	535-6606-01	14	3-Bank Drop Target Assembly	500-5621-03
4A	Flipper Asm., Lower Right	500-5693-01	15	4-Bank Drop Target Assembly	500-5621-04
4B	Flipper Asm., Lower Left	500-5693-02	16	5-Bank Drop Target Assembly	500-5799-05
5	Flipper Asm., Upper Right	500-5914-01	17	Stand-Up Narrow Trgt. (Qty. 2)	500-5857-08
6	Slingshot Assemblies (Qty. 2)	500-5226-00	18A	Paddle Wheel Assembly	500-5854-01
7	Vertical Up-Kicker Asm. (VUK)	500-5839-00	18B	Ball Lock Assembly	500-5867-01
8	Turbo Bumper Asm. (Qty. 3)	500-5227-02	19	Paddle Wheel / Left Orbit Ball Deflector Assembly	500-5886-00
9	Skill Shot Launch Assembly	500-5862-01	20A	Plastic Ramp Diverter	515-6139-00
10	Knocker Assembly (In Cabinet)	500-5081-00	20B	Plastic Ramp Gate Asm. (Works with 20A)	515-6137-00
11	Poker Chip Shooter Asm.	500-5856-06			
12	Laser Kick Back Assembly	500-5838-00			

† See Unique Parts for Major Assembly Breakdowns.

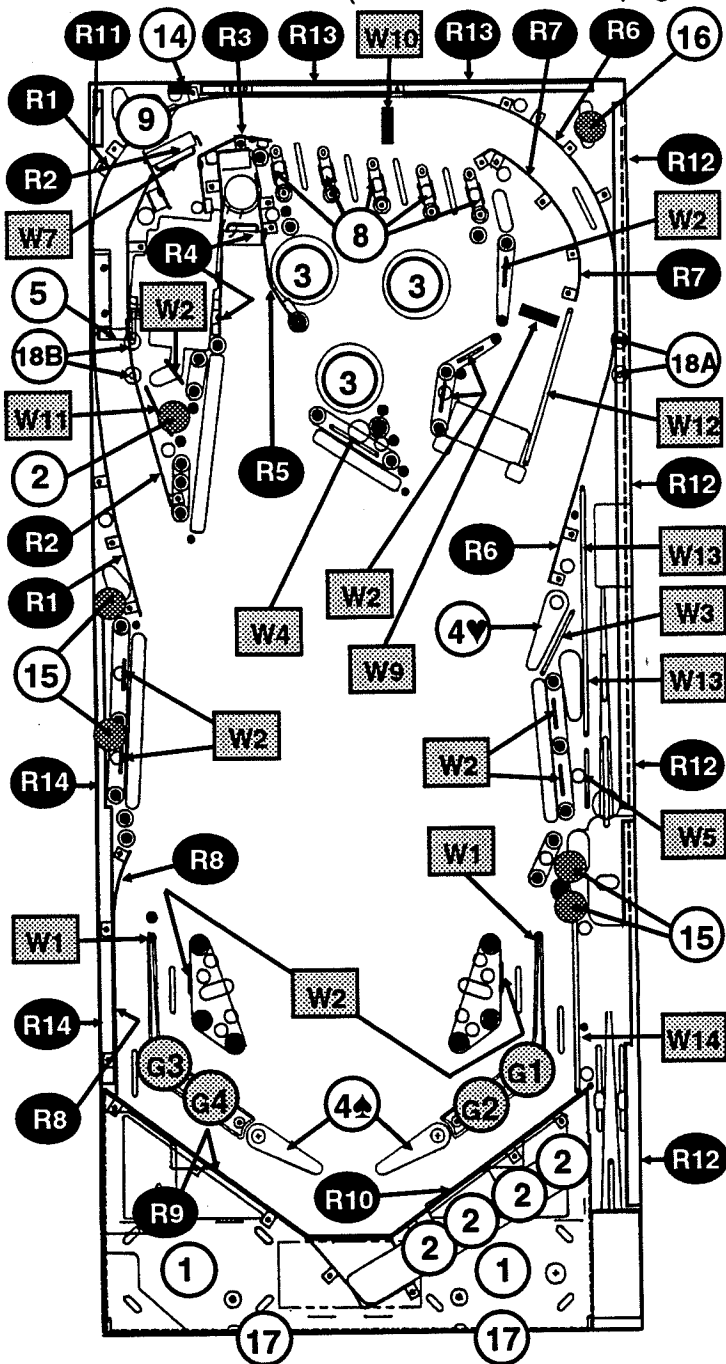
PLAYFIELD - RAMPS †



Item	Description	Part No.	Item	Description	Part No.
1 †	Right Plastic Ramp Assembly †	500-5883-01	5	Shooter Lane Wire Ramp Ass'y	500-5895-00
2	Right Return Wire Ramp	535-6253-00	5A	Shooter Lane Wire Ramp	515-6106-01
3 †	Left Return Wire Ramp Assy. †	500-5884-00	5B	Snap-In Minimars Red (Qty. 2)	550-5030-02
4	Skill Shot Flat Ramp Assy.	500-5885-00	5C	Clear Butyrate Around Lights	830-5466-32
4A	Skill Shot Flat Ramp	515-6145-00	5D	Mini-Foam Pad Hold Down	
4B	Microswitch	180-5126-00	5E	Clear Butyrate Small	830-5466-29
4C	Diode 1N4001	112-5001-00	5F	Screws (Qty. 2)	
4D	#2-56 5/8 HWHS Screws (Qty. 2)	237-5917-00	6	VUK Exit Wire Ramp	535-6299-01
† See Unique Parts for Ramp Assembly Breakdowns.					

PLAYFIELD - TOP PARTS (LOCATIONS)

(See Tables on next page for descriptions/part numbers)



Ramps are not shown on drawing for clarity. See Playfield - Ramps (pg. 41) & Unique Parts (pgs. 64-67) for other Top Parts on the ramps.

#	General Parts
#	Painted Butyrate Pieces
#	Clear Butyrate Pieces
R#	All Rails (Flat, Wood, & Steel)
G#	All Ball Guides (Plastic & Metal)
W#	All Wire Forms (Metal)

Butyrate Notes:

The butyrate complete sheet PN is 830-5466-XX. Below are the individual locations for the pieces.

Not Shown:

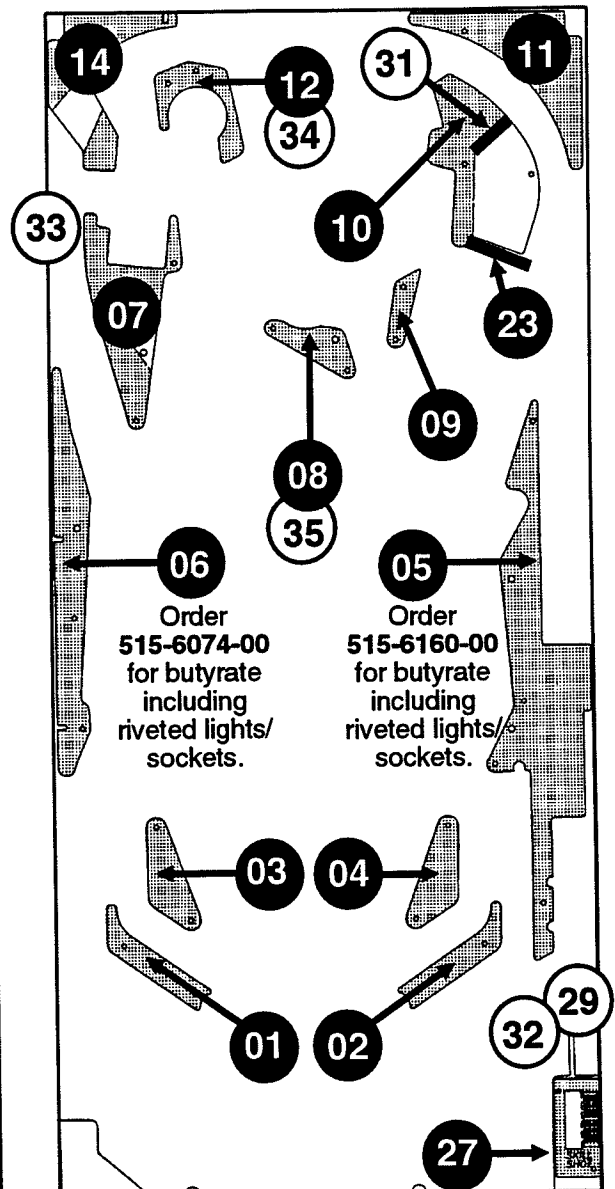
Item -15 is the Narrow Backpanel Butyrate
Item -16 is the Wider Backpanel Butyrate
Item -17 is the Key Chain
Item -18 is the Backbox Header

Clear Pieces (Unnumbered):

Item -34 is over item -12
Item -33 (Small) is over item -07
Item -35 is over item -08

Riveted Butyrate Assemblies:

Item -05 & Item -06 have 2 lights/sockets riveted to the butyrate. The part number to order if the Butyrate with lights / sockets is required are noted below under the item number.



PLAYFIELD - TOP PARTS (TABLES)

(See diagrams on previous page for locations, except for items noted with an asterisk*)

Item	Description	Part No.
1	Bottom Arch Assembly (Metal)	500-5861-01
2	1-1/16" Steel Balls, 1-Captive, 4-Play (5 Total)	260-5000-00
3	Pop Bumper Cap (Clear) X3	550-5057-01
4♠	Flipper & Shaft Ass'y White ♠ X2	515-5133-01-01
4♥	Flipper & Shaft Ass'y White ♥ X1	515-5133-01-02
5 *	Left Orbit Switch Gate	See Flat Rails
6 *	1-Way Gate to Paddle Wheel	See Flat Rails
7 *	1-Way Gate to VUK	See Flat Rails
8	Lite Hood Top Lanes Yellow X5	550-5036-06
9	Spot Lite & Bracket Ass'y X1	500-5893-00
10 *	Lite Deflectors on Ramps X2	518-5026-11
11 *	Lite Cvr. Red Enter Ramp	545-5014-02
12 *	Lite Cvr. Yellow Skill Shots X3	545-5014-06
13 *	Lite Cvr. Flo. Org. Enter Ramp	545-5014-10
14	Mini-Mars Lite Cvr. Flo. Org.	550-5031-10
15	Mini-Mars Lite Cvr. Snap Red X4	550-5030-02

Item	Description	Part No.
16	Mini-Mars Light Cover Yellow	550-5031-06
17	Playfield Hanging Bracket X2	535-5216-03
18A	Pivot Pin Bracket Ass'y Right	500-5329-00
18B	Pivot Pin Bracket Ass'y Left	500-5329-01
	Both Incl. Pivot Brkt. Screws X4 and T-Nut X4	237-5907-00 240-5101-00
19 *	Stay Arm Holder	535-5747-00
20 *	Plastic Riverboat	545-5539-02

Desc.: Butyrate	Part No.
P/F Butyrate Pieces † (1-34)	830-5466-XX

† To order replacement Butyrate, fill in the last 2 #'s with the corresponding # printed on each piece. For Clear Butyrate, describe location. Please view the location diagram for butyrate on the previous page.

See *Playfield - Ramps* (pg. 41) or *Unique Parts* (pgs. 66 & 67) for Clear Butyrate attached to ramps.

Item	Desc.: Mylar	Part No.
M1 *	Mylar Pieces (Clear Pre-Scored)	820-5841-00
M2 *	Mylar Pad (Clear . 1" Sq.) X3	820-5815-00
M3 *	Front of Slingshot Clear Mylar	820-5821-00

Item	Desc.: Decals	Part No.
D1 *	Decal Sheet for Arch & Bumpers	820-6108-XX
D2 *	Decals for 3-Bank Drops	820-6110-01
D3 *	Decals for 4-Bank Drops	820-6110-02
D4 *	Decals for 5-Bank Upr. Drops	820-6110-03
D5 *	Decals for 5-Bank Lwr. Drops	820-6110-04

Item	Desc.: Rails (R)	Part No.
R1	Flat Rail Outer Left Orbit	535-6231-01
R2	Flat Rail Inner Lt. Orbit w/Gate & Paddle Wheel Gate Riveted	500-5904-00
R3	Flat Rail Behind VUK w/OPTO	515-6117-01
R4	Flat Rail to VUK Left with VUK Gate Riveted	515-6173-00
R5	Flat Rail to VUK Right	535-6250-01
R6	Flat Rail Outer Right Orbit	535-6232-01
R7	Flat Rail Inner Right Orbit	535-6230-01
R8	Flat Rail Left Outlane	535-6237-01
R9	Flat Rail Bottom Arch Left	535-6240-01
R10	Flat Rail Bottom Arch Right	535-6239-01
R11	Steel Rail Mini Upr. Left Corner	535-7097-00
R12	Steel Rail Playfield Right	535-6265-01
R13	Wood Rail 15" Top of Playfield	525-5007-12
R14	Wood Rail Bottom Left Playfield	525-5376-00

Item	Desc.: Ball Guides (G)	Part No.
G1	Ball Guide Upper Right Return	550-5043-01
G2	Ball Guide Lower Right Return	550-5037-01
G3	Ball Guide Upper Left Return	550-5038-01
G4	Ball Guide Lower Left Return	550-5064-01

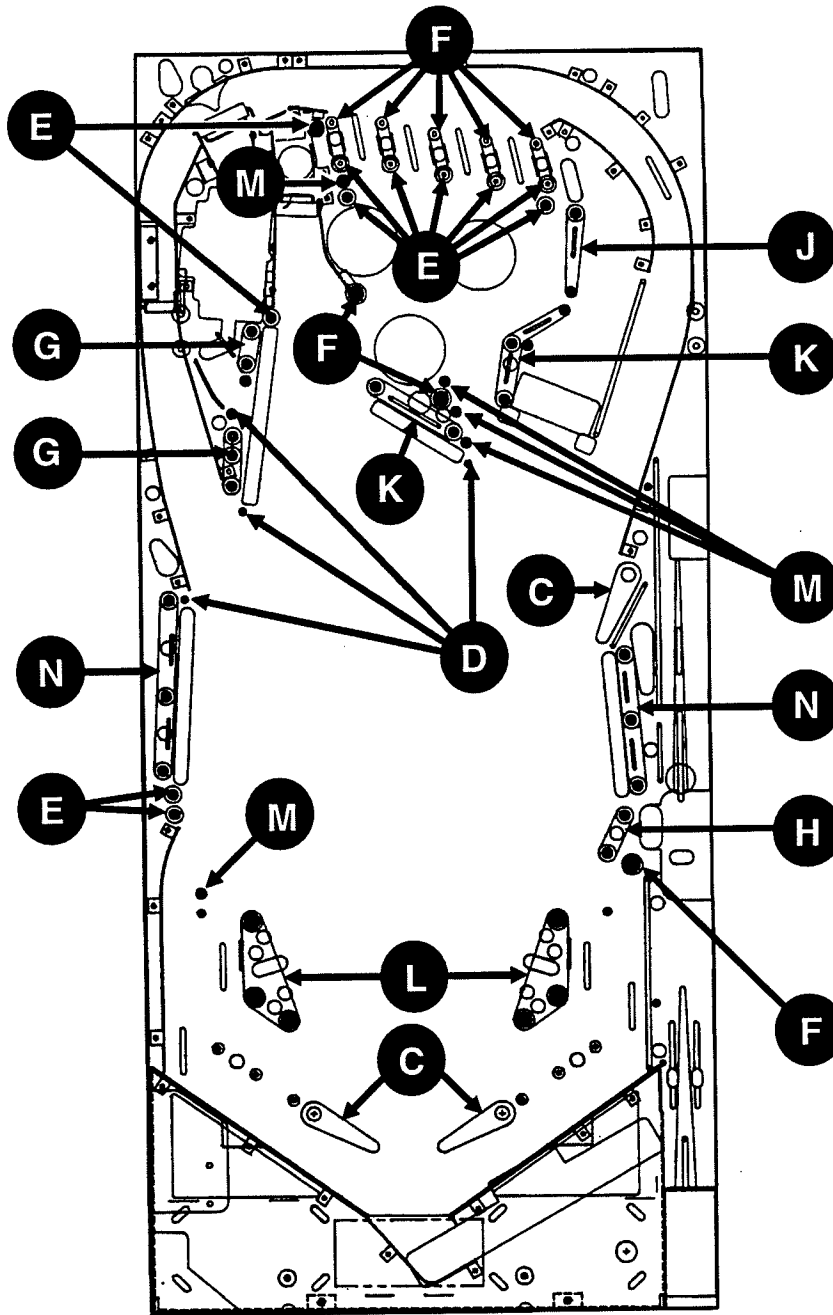
Item	Desc.: Wire Forms (W)	Part No.
W1	Wire Form on Ball Guides X2	535-5642-00
W2	Wire Form 1" X10	535-5300-05
W3	Wire Form 2.5" (Upr. Flipper)	535-5300-01
W4	Wire Form 2" ø .120 (3-Bank)	535-5356-01
W5	Wire Form 2" ø .090 (4-Bank)	535-5300-10
W6	Wire Form on Left Orbit Gate	535-7078-00
W7	Wire Form on Paddle Wheel Gate	535-7087-01
W8	Wire Form on VUK Gate	535-7112-00
W9	Wire Form on Ramp Enter Gate	535-7163-00
W10	Wire Form on Ramp Exit Gate	535-6304-00
W11	Wire Form 2.75" Upr. 5-Bank	535-6492-02
W12	Wire Form 5.75" Inner Rt. Orbit	535-6492-12
W13	Wire Form 8.844" Shooter Lane	535-6546-01
W14	Wire Form 6.75" Right Outlane	535-6992-05
*	Snubbers Lwr. Flip. (Not Used)	535-5373-01

Page	Desc.: Other Part Numbers
44	Rubber Parts
45	Posts
46	Lamps with Sockets
47	Lamps with Sockets & Lamp Boards
See Table of Contents to find any other parts.	

PLAYFIELD - RUBBER PARTS

A
Item A is located on the Knocker, Skill Launch, VUK, and Laser Kick Back.

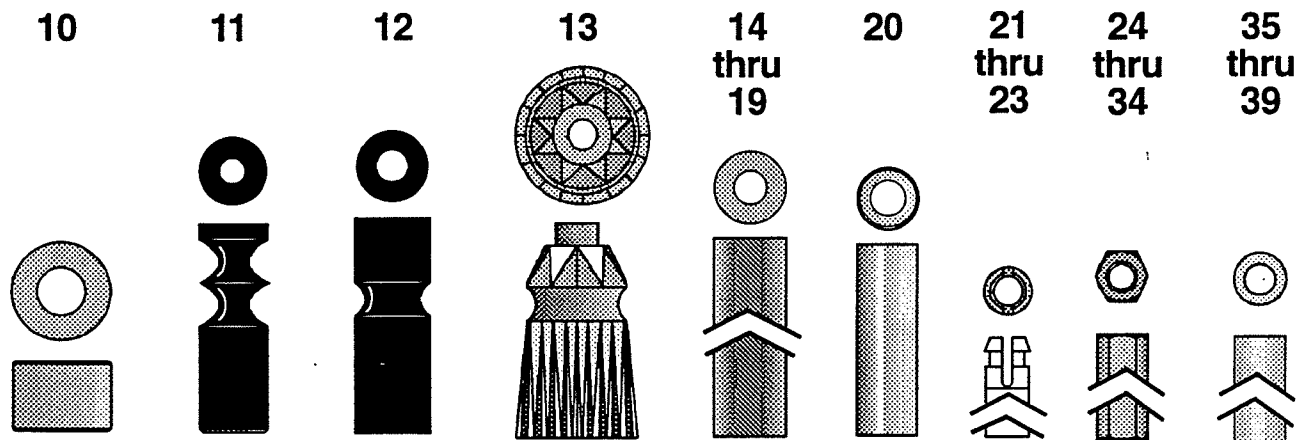
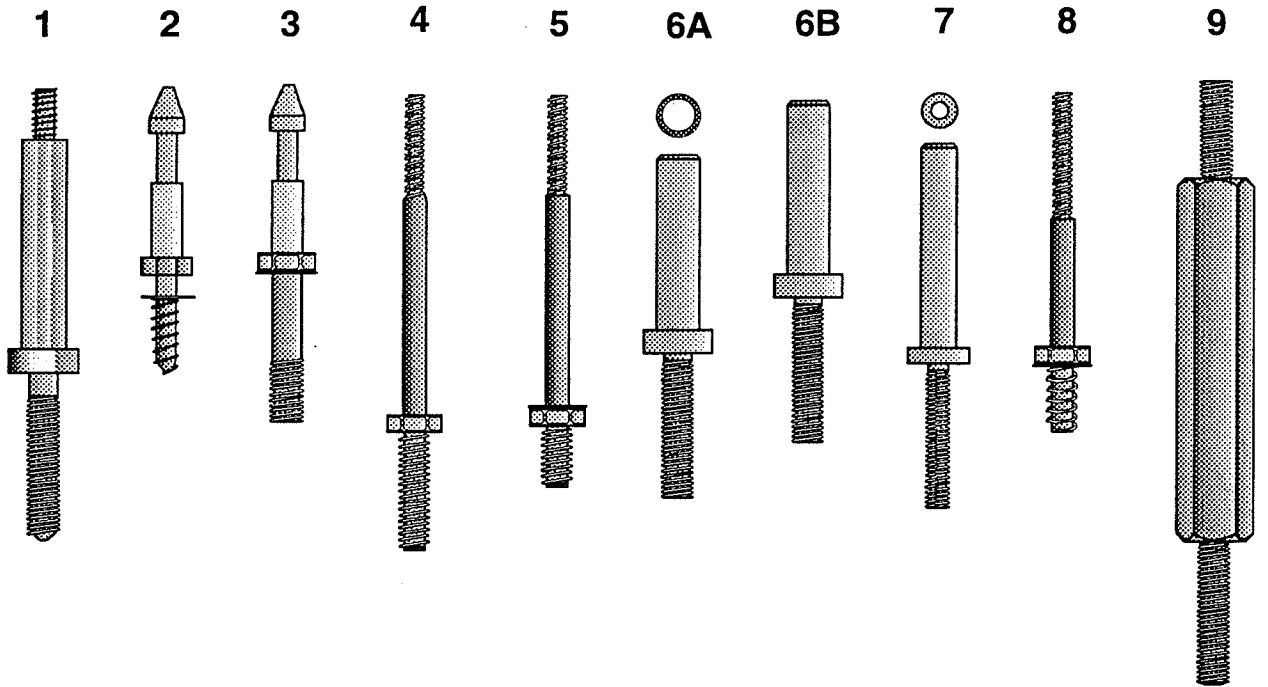
B
Item B locations are not shown to maintain clarity in this diagram. An example of item B is located under item E at left outline.



Item	Description	Qty.	Part No.	Item	Description	Qty.	Part No.
A	Rubber Bumper	4	545-5105-00	†	1-1/4" I.D. Black Rubber Ring	0	545-5348-06
B	Post Rubber (Sleeve Short)	24	545-5151-00	J	1-1/2" I.D. Black Rubber Ring	1	545-5348-07
†	Flipper Bushing (Small)	0	545-5192-00	K	2" I.D. Black Rubber Ring	2	545-5348-08
C	Flipper Rubber Rings	3	545-5277-00	L	2-1/2" I.D. Black Rubber Ring	2	545-5348-09
D	Post Rubber (Sleeve Tall)	4	545-5308-00	M	3/8" O.D. Black Rubber Ring	5	545-5348-19
E	3/16" I.D. Black Rubber Ring	11	545-5348-01	†	Bumper Post Rubber	0	545-5009-00
F	5/16" I.D. Black Rubber Ring	8	545-5348-02	N	2-3/4" I.D. Black Rubber Ring	2	545-5348-20
G	3/4" I.D. Black Rubber Ring	2	545-5348-04	†	1-3/4" I.D. Black Rubber Ring	0	545-5348-21
H	1" I.D. Black Rubber Ring	1	545-5348-05	† Items with a zero qty. are not used in this game.			

Please note, the size and/or quantities may change as production continues.

PLAYFIELD - POSTS

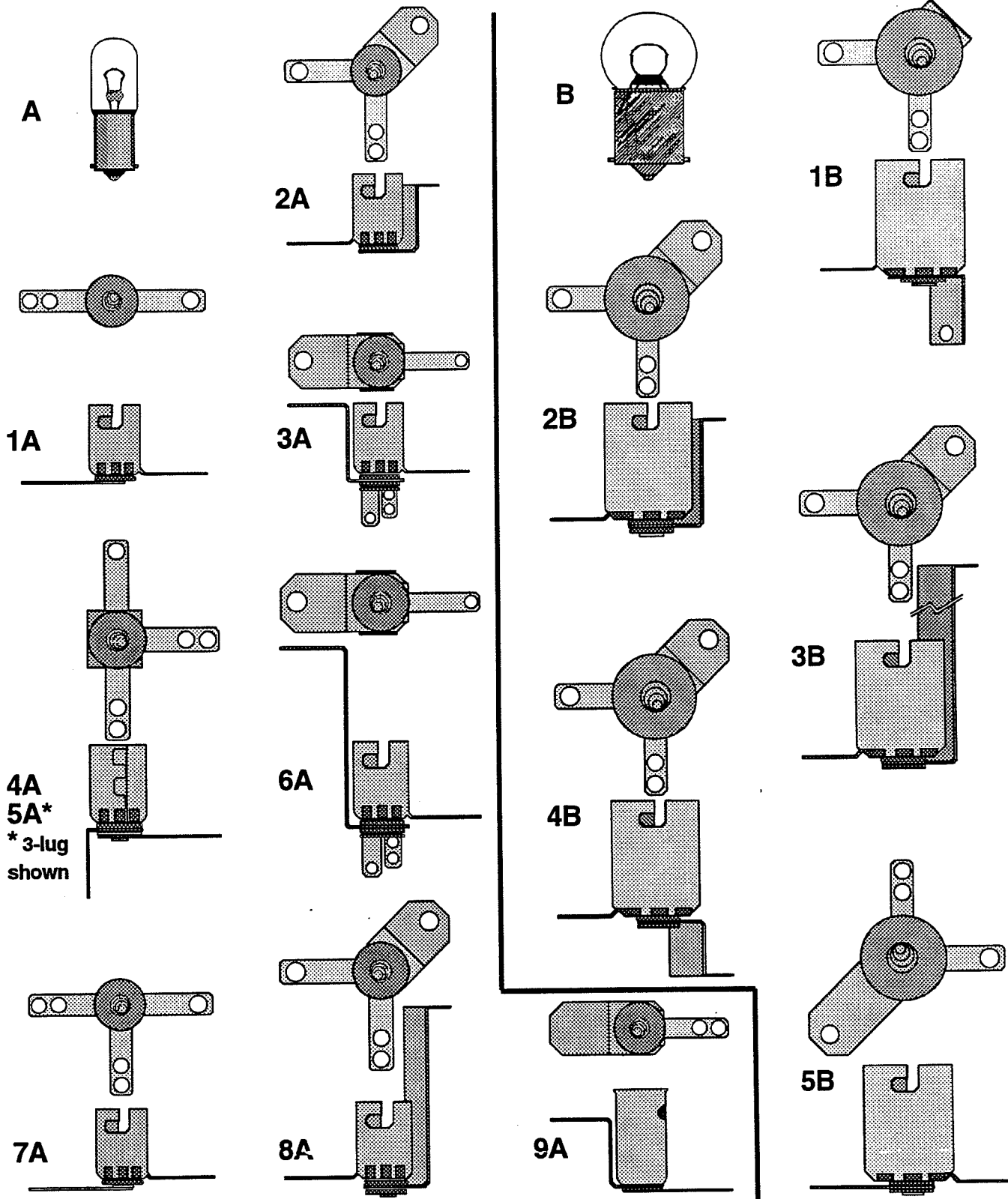


Item	Description	Qty.	Part No.	Item	Description	Qty.	Part No.
1	BUMPER POST - MACHINE	0	530-5007-00	20	Spcr. 1" Lg Metal 5/16" X .144ID	0	254-5001-00
2	MINI-POST-WOOD THD	4	530-5004-00	21	Spcr. 3/8" Plstc. Slf. Rtn. SRS6-6-01	26	254-5007-01
3	MINI-POST-MACHINE THD	4	530-5005-00	22	Spcr. 1/4" Plstc. Slf. Rtn. SRS6-4-01	4	254-5007-02
4	MACH. POST SCREW LG.	7	530-5008-00	23	Spcr. 3/4" Plstc. Slf. Rtn. SRS6-12-01	0	254-5007-03
5	POST MACHINE SCREW	18	530-5012-02	24	Spacer 1/4" Hex Tapped 6-32	0	254-5008-00
6A*	BUMPER POST 8-32 TAP	0	530-5075-00	25	Spacer 1/2" Hex Tapped 6-32	1	254-5008-03
6B	BUMPER POST UNTAPPED	5	530-5057-01	26	Spacer 5/8" Hex Tapped 6-32	3	254-5008-02
7	BUMPER POST 6-32 TAP	0	530-5127-00	27	Spacer 3/4" Hex Tapped 6-32	3	254-5008-04
8	POST MACHINE SCREW	0	530-5263-01	28	Spacer 1" Hex Tapped 6-32	2	254-5008-06
9	MINI-PLAYFIELD SUPPORT	0	530-5285-00	29	Spacer 2" Hex Tapped 6-32	6	254-5008-07
10	SPACER BACKBOX HINGE	2	530-5099-00	30	Spacer 2 5/8" Hex Tapped 6-32	1	254-5008-08
11	STAND-OFF 2 GRV. 1-1/16"	0	530-5102-01	31	Spacer 1 1/2" Hex Tap. 6-32	1	254-5008-09
12	PLASTIC POST (GRY)	28	550-5059-00	32	Spacer 1 1/4" Hex Tap. 6-32	0	254-5008-11
13	SML. JEWEL POST (CLEAR)	3	550-5034-01	33	Spacer 2 3/4" Hex Tap. 6-32	0	254-5008-12
	SML. JEWEL POST (GRN)	9	550-5034-04	34	Spacer 1 7/8" Hex Tap. 6-32	1	254-5008-20
14	SPCR. 1/2" PLSTC. (BLK) 3/8"	2	254-5000-01	35	Spcr. 1/2" Lg. X 5/16" X .144ID	3	254-5014-00
15	SPCR. 1/2" PLSTC. Nar. 3/8"	1	254-5000-03	36	Spcr. 3/4" Lg. X 5/16" X .144ID	0	254-5014-01
16	SPCR. 1" PLSTC. 3/8"	2	254-5000-04	37	Spcr. 1.13" Lg. X 5/16" X .144ID	6	254-5014-02
17	SPCR. 1 1/4" PLSTC. 3/8"	0	254-5000-05	38	Spcr. 1/4" Lg. X 5/16" X .144ID	4	254-5014-03
18	SPCR. 1 1/8" PLSTC. 3/8"	1	254-5000-06	39	Spcr. 9/16" Lg. X 5/16" X .144ID	3	254-5014-04
19	SPCR. 3/4" PLSTC. 3/8"	3	254-5000-07	† Items with a zero Qty. are not used in this game.			

Please note, the size and/or quantities may change as production continues.

PLAYFIELD - LAMPS WITH SOCKETS

Item	Description (1 bulb per socket)	Qty.	Part No.	Item	Description (1bulb per socket)	Qty.	Part No.
A	#44 Bulb	80	165-5000-44	8A	2-Lug Stand-Up Long Socket	2	077-5005-00
1A	2-Lug Staple Down Socket	56	077-5000-00	9A	1-Lug Stand-Up Long Socket	3	077-5012-00
2A	2-Lug Stand-Up Short Socket	0	077-5002-00	B	#89 Bulb	29	165-5000-89
3A	3-Lug Stand-Up Short Socket	0	077-5008-00	1B	Laydown Standard Socket	1	077-5100-00
4A	3-Lug Laydown Socket	9	077-5006-00	2B	Stand-Up, Short Socket	17	077-5101-00
5A	2-Lug Laydown Socket	1	077-5003-00	3B	Stand-Up, Long Socket	7	077-5102-00
6A	3-Lug Stand-Up Long Socket	10	077-5009-00	4B	S-U, Socket Rev. Short	4	077-5103-00
7A	3-Lug Staple Down Socket	0	077-5001-00	5B	Straight Leg Socket	0	077-5107-00

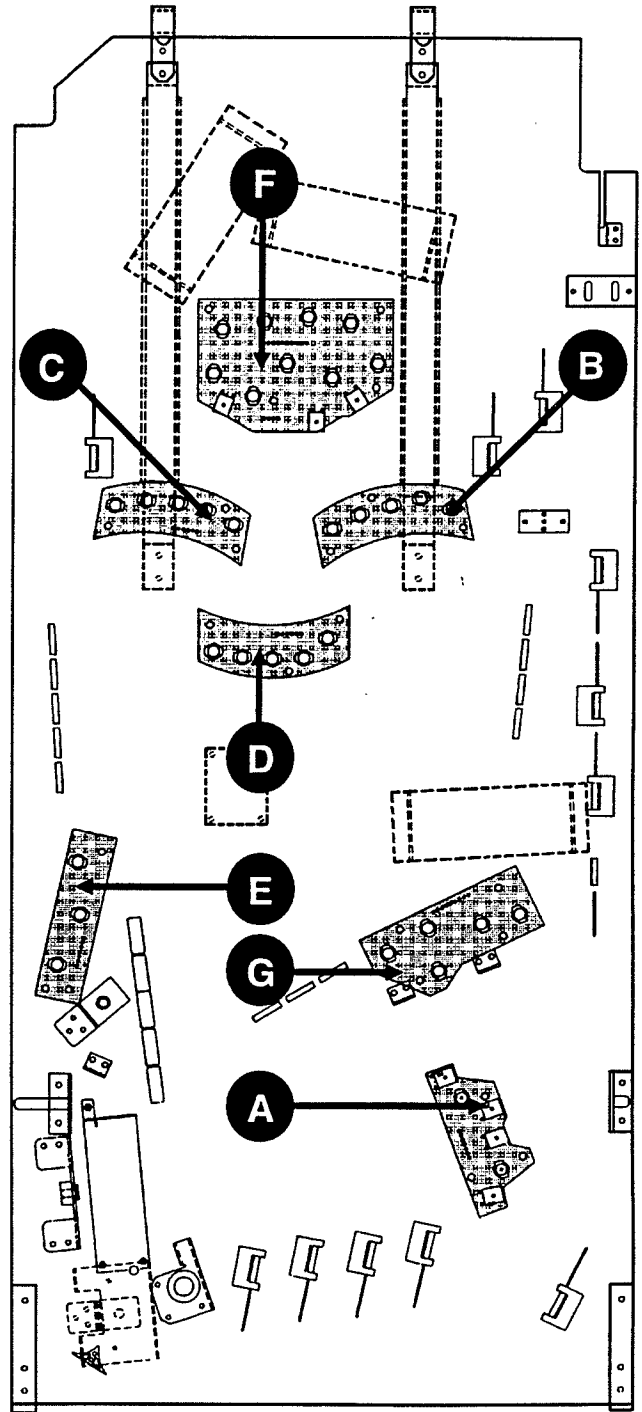
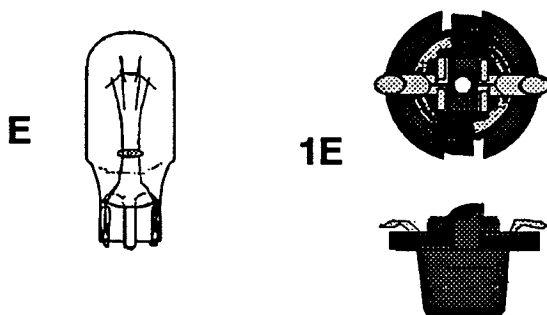
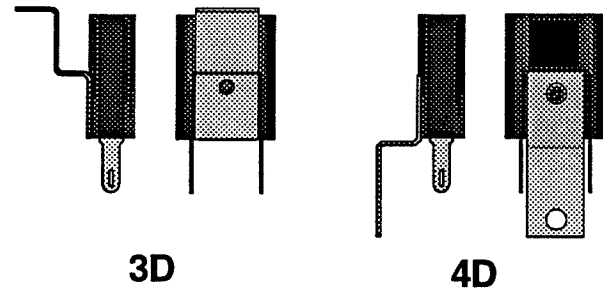
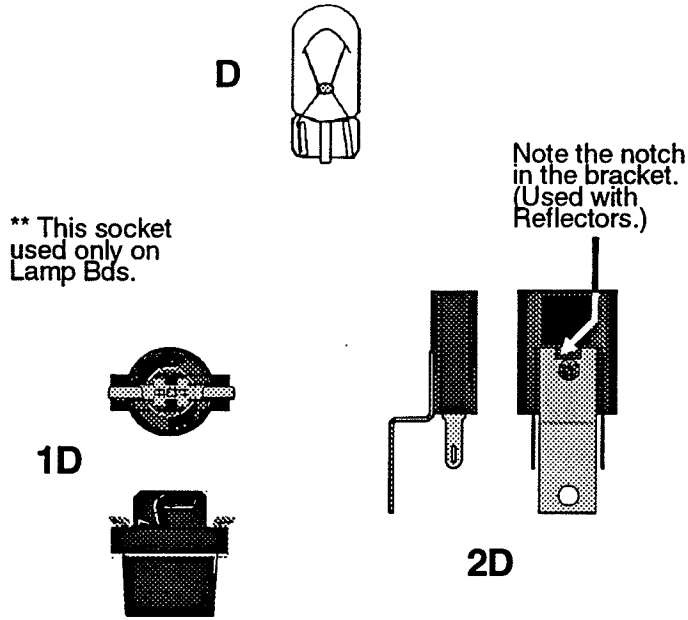


PLAYFIELD - LAMPS WITH SOCKETS

Item	Description (1 bulb per socket)	Qty.	Part No.
D	#555 Wedge Base Bulb *	48	165-5002-00
1D	555 Wedge Base Socket **	34	077-5007-00
2D	Laydown Wedge Base L/R BLK	4	077-5026-01
3D	Wedge Offset Bracket Socket	5	077-5029-00
4D	Laydown Wedge Base Black	0	077-5026-00
E	#906 Wedge Base Bulb	5	165-5004-00
1E	906 Wedge Base Socket	0	077-5016-00

* - 3 extra #555 Bulb located 1 per Pop Bumper.

Item	Lamp Board P.N.	Item	Lamp Board P.N.
A	520-5093-01	E	520-5079-05
B	520-5093-02	F	520-5079-06
C	520-5093-03	G	520-5079-07
D	520-5093-04		



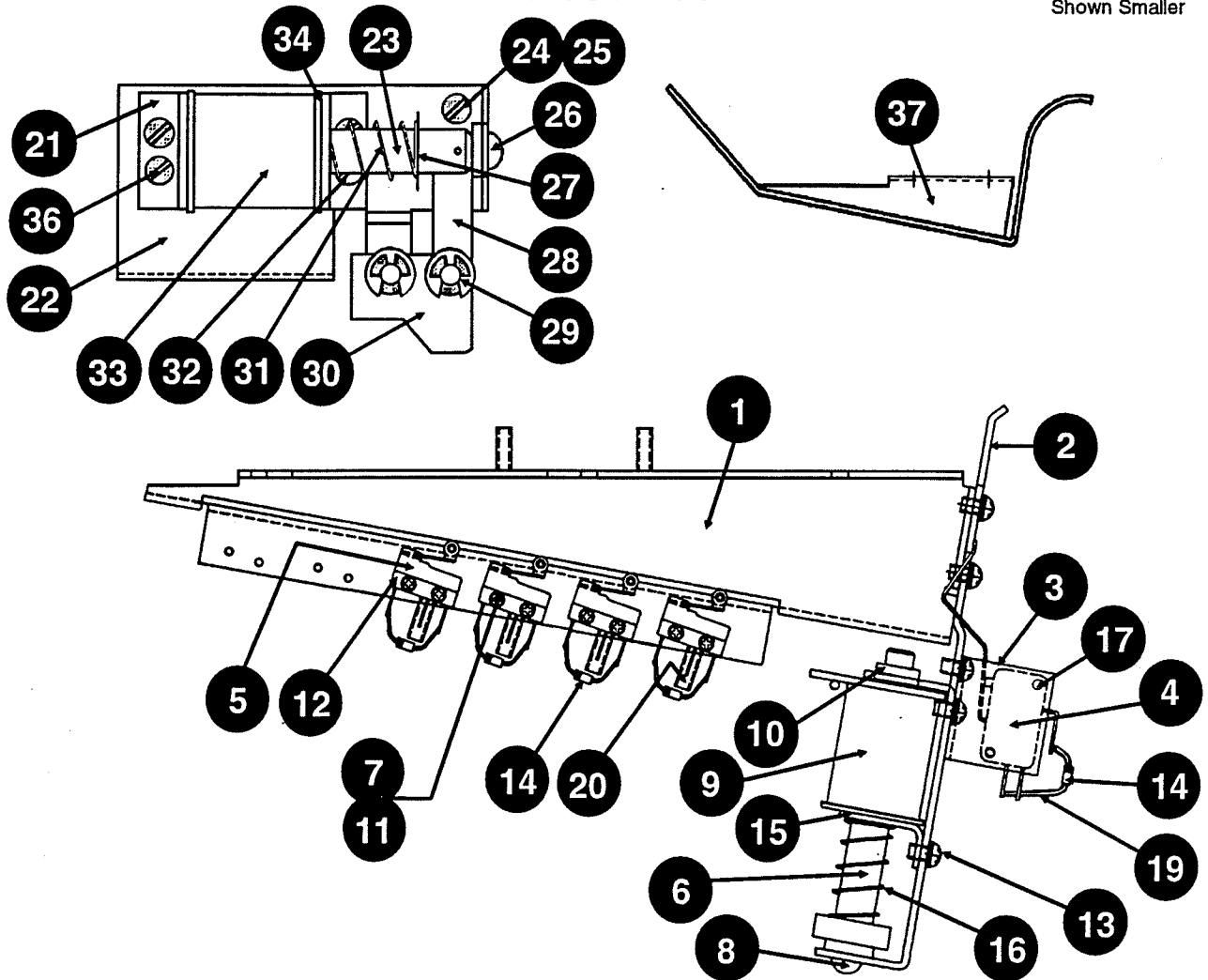
UNDER PLAYFIELD: BOTTOM VIEW

UNIQUE PARTS

Lock Ball Asm.
500-5684-01

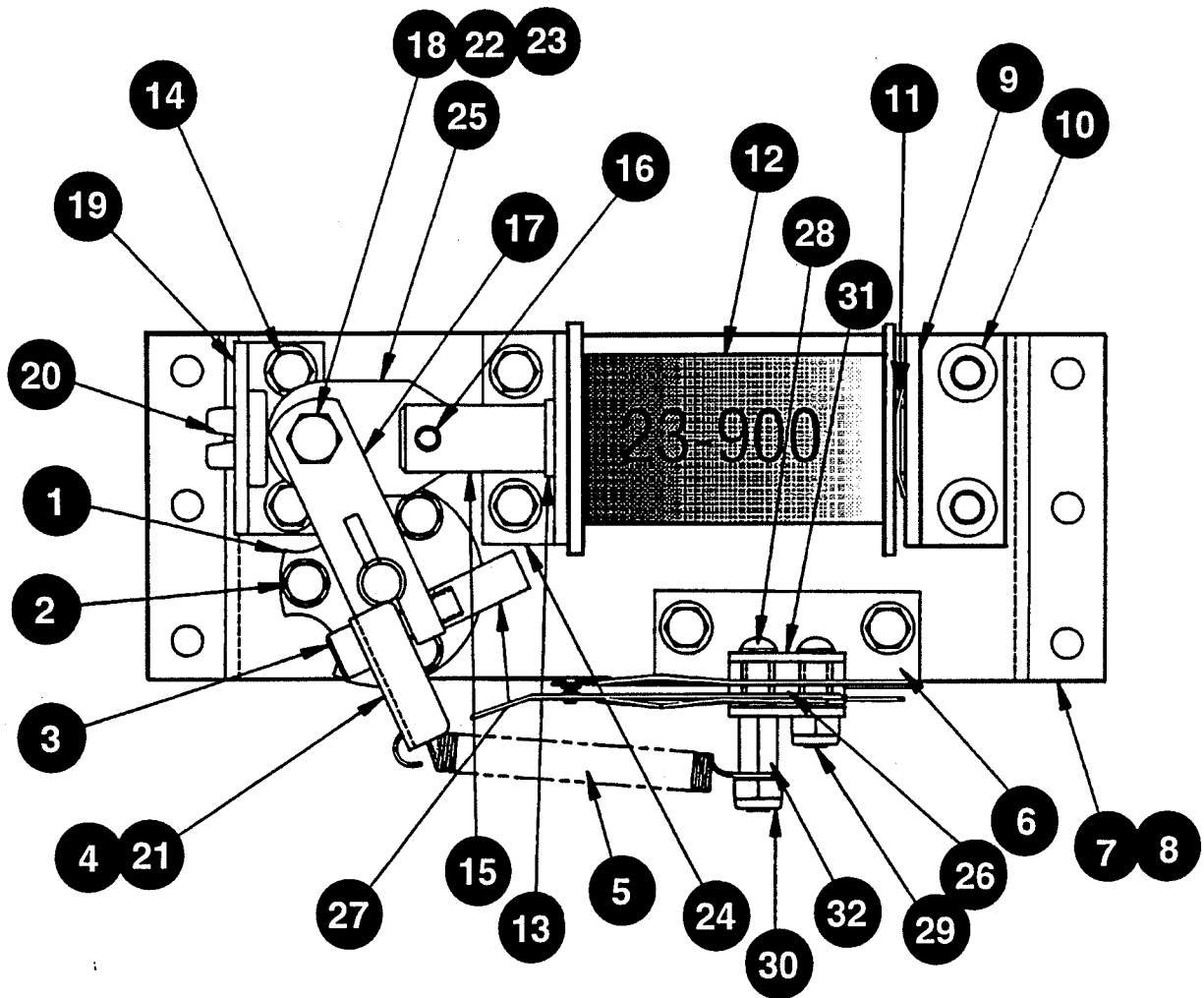
4-Ball Trough Assembly
500-5891-00

Deflector
535-6606-01
Shown Smaller



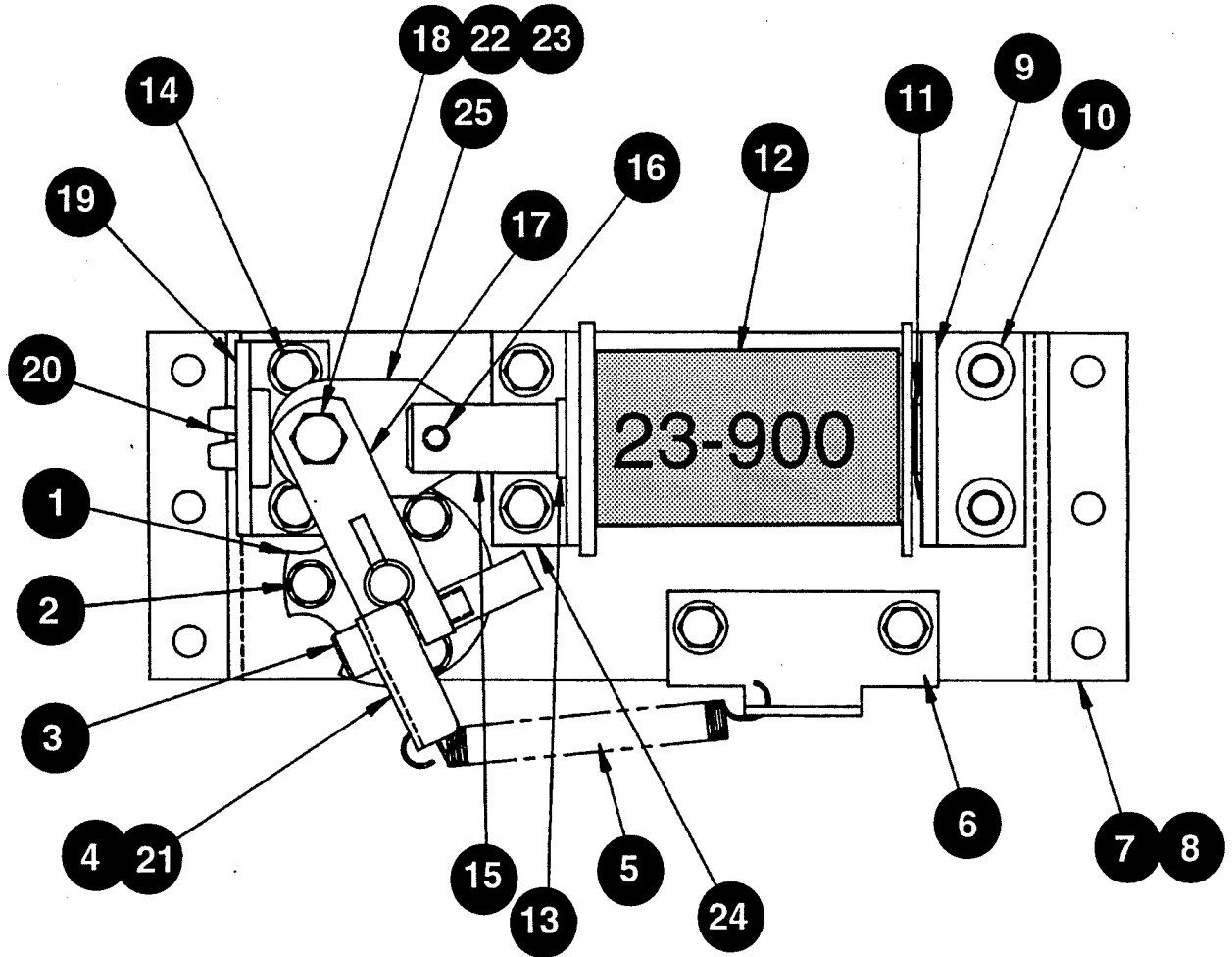
Item	Description	Part No.	Item	Description	Part No.
1	Outhole Mounting Bracket	535-6621-01	21	Core Stop Assembly	515-5088-00
2	Coil Mounting Bracket	535-6622-01	22	Lock Ball Bracket Assembly	515-5817-01
3	Switch Mounting Bracket	535-6623-00	23	Plunger $\varnothing 7/16 \times 2\text{-}1/4$ LG	530-5250-01
4	Switch, Miniature	180-5118-00	24	Spacer	545-5400-00
5	Switch, Subminiature (Qty. 4)	180-5119-00	25	#8-32 PPH X 1" LG	232-1104-16
6	Plunger Assembly	515-5000-02	26	Rubber Bumper	545-5105-00
7	#2-56 PPH X .5 LG (Qty. 8)	237-5806-00	27	E-Ring $\varnothing .44$ Shaft	270-5005-00
8	Rubber Bumper	545-5105-00	28	Link, Lock Ball	535-6649-00
9	Coil, 23-800, incl. Coil Sleeve	090-5001-01	29	E-Ring, .25 Shaft (Qty. 2)	250-0008-00
10	Coil Sleeve	545-5076-00	30	Lock Ball Cam Assembly	515-5815-01
11	#2 Split LW (Qty. 8)	244-5001-00	31	Spring	266-5000-00
12	Switch Protector (Qty. 4)	535-6539-00	32	Coil Retaining Bracket	535-6658-00
13	#8-32 PPHW/SEM X .25 LG (Qty. 8)	232-5300-00	33	Coil, 25-1240, incl. Coil Sleeve	090-5034-00
14	IN4001 Diode (Qty. 5)	112-5001-00	34	Coil Sleeve	545-5411-00
15	Coil Retaining Bracket	535-5203-01	35	Wire Harness (Not Shown)	036-5301-01
16	Spring	266-5020-00	36	#6-32 HWH TC X .38 LG (Qty. 4)	237-5898-00
17	#4-40 PPH X .62 LG (Qty. 2)	237-5832-00	37	Ball Deflector (Trough Entry Scoop)	535-6606-01
18	Cable Asm. (Not Shown)	036-5301-04			
19	Insulating Tubing .08 FT.	605-5003-00			
20	Insulating Tubing .17 FT.	605-5006-00			

Flipper Assembly, Lower 500-5693-01 (Right), 500-5693-02 (Left)



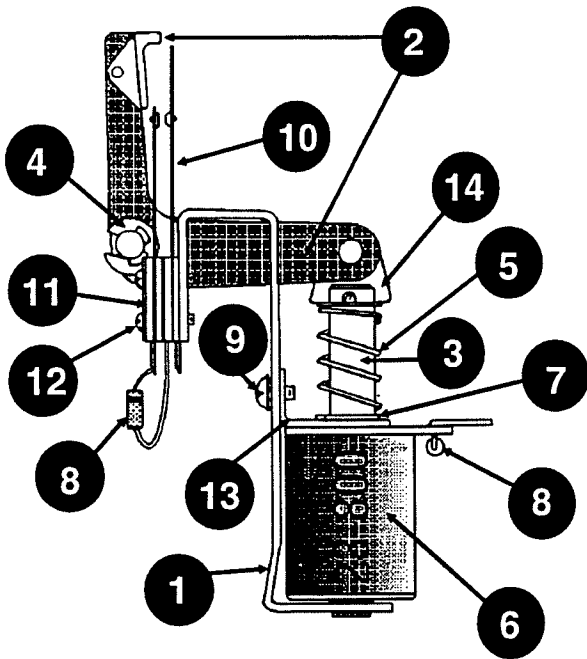
Item	Description	Part No.	Item	Description	Part No.
1	Flipper Bushing	545-5070-00	17	Pawl	530-5070-00
2	#6-32 X .38 LG HWH (Qty. 3)	237-5910-00	18	#10-32 X .75 LG Shoulder Bolt	231-5019-00
3	#10-32 SOC HD X .75 LG	237-5864-00	19	Plunger Stop Bracket	535-5279-01
4	Spring Bracket (Left)	535-6663-02	20	Nylon Stop	545-5445-00
5	Flipper Return Spring	265-5029-02	21	Spring Bracket (Right)	535-6663-01
6	Switch Mounting Bracket	535-6664-00	22	Bushing	530-5139-00
7	Flipper Base (Left)	515-5077-02	23	#10-32 Elastic Stop Nut	240-5203-00
8	Flipper Base (Right)	515-5077-01	24	Front Bracket	535-6453-00
9	Coil Stop Bracket	515-5346-00	25	Flipper Link	545-5401-00
10	¼-20 SOC HD X .38 LG (Qty. 2)	237-5861-00	26	Power Switch	180-5124-01
11	Spring Washer	269-5002-00	27	Plastic Cap	545-5084-00
12	Coil 23-900, incl. Coil Sleeve	090-5020-30	28	#6-32 X 1" LG PPH	237-5506-00
13	Coil Sleeve	545-5388-00	29	#6-32 X .63 LG PPH	237-5899-00
14	#8-32 X .38 LG HWH (Qty. 6)	237-5903-00	30	#6-32 Elastic Stop Nut	240-5005-00
15	Plunger and Link Assembly	515-5822-00	31	Switch Plate	535-5045-00
16	Roll Pin	251-5000-00	32	¼ Hex Spacer (¾" Long)	254-5008-12

Flipper Assembly, Upper 500-5914-01 (Right)



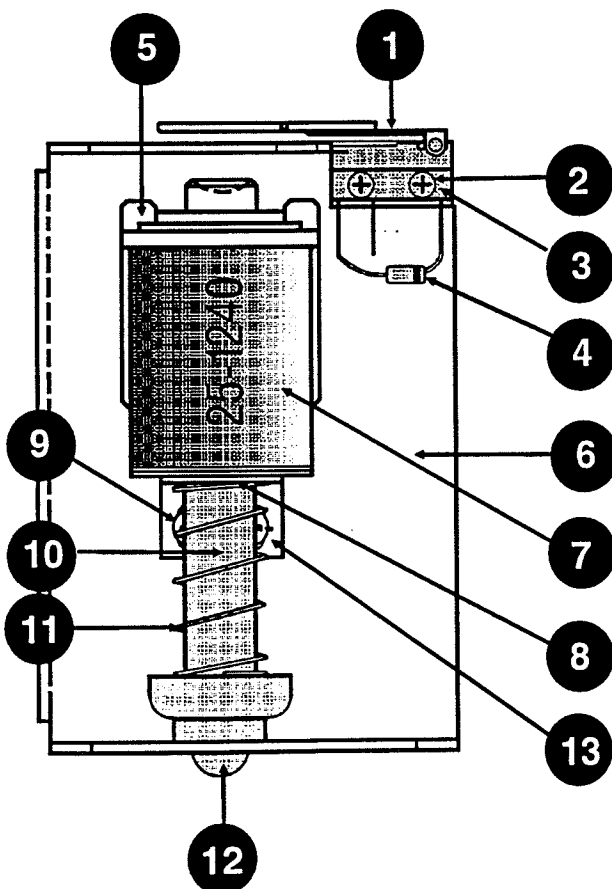
Item	Description	Part No.	Item	Description	Part No.
1	Flipper Bushing	545-5070-00			
2	#6-32 X .38 LG HWH (Qty. 3)	234-5000-00	14	#8-32 X .38 LG HWH (Qty. 6)	234-5100-00
3	#10-32 SOC HD X .75 LG	237-5864-00	15	Plunger and Link Assembly	515-5822-00
4	Spring Bracket (Left)	535-6663-02	16	Roll Pin	251-5000-00
5	Flipper Return Spring	265-5029-02	17	Pawl	530-5070-00
6	Switch Mounting Bracket	535-6664-00	18	#10-32 X .75 LG Shoulder Bolt	231-5019-00
7	Flipper Base (Left)	515-5077-02	19	Plunger Stop Bracket	535-5279-01
8	Flipper Base (Right)	515-5077-01	20	Nylon Stop	545-5445-00
9	Coil Stop Bracket	515-5346-00	21	Spring Bracket (Right)	535-6663-01
10	1/4-20 SOC HD X .38 LG (Qty. 2)	237-5861-00	22	Bushing	530-5139-00
11	Spring Washer	269-5002-00	23	#10-32 Elastic Stop Nut	240-5206-00
12	Coil 23-900, incl. Coil Sleeve	090-5050-30	24	Front Bracket	535-6453-00
13	Coil Sleeve	545-5388-00	25	Flipper Link	545-5401-00

Lower Slingshot Assemblies 500-5226-00



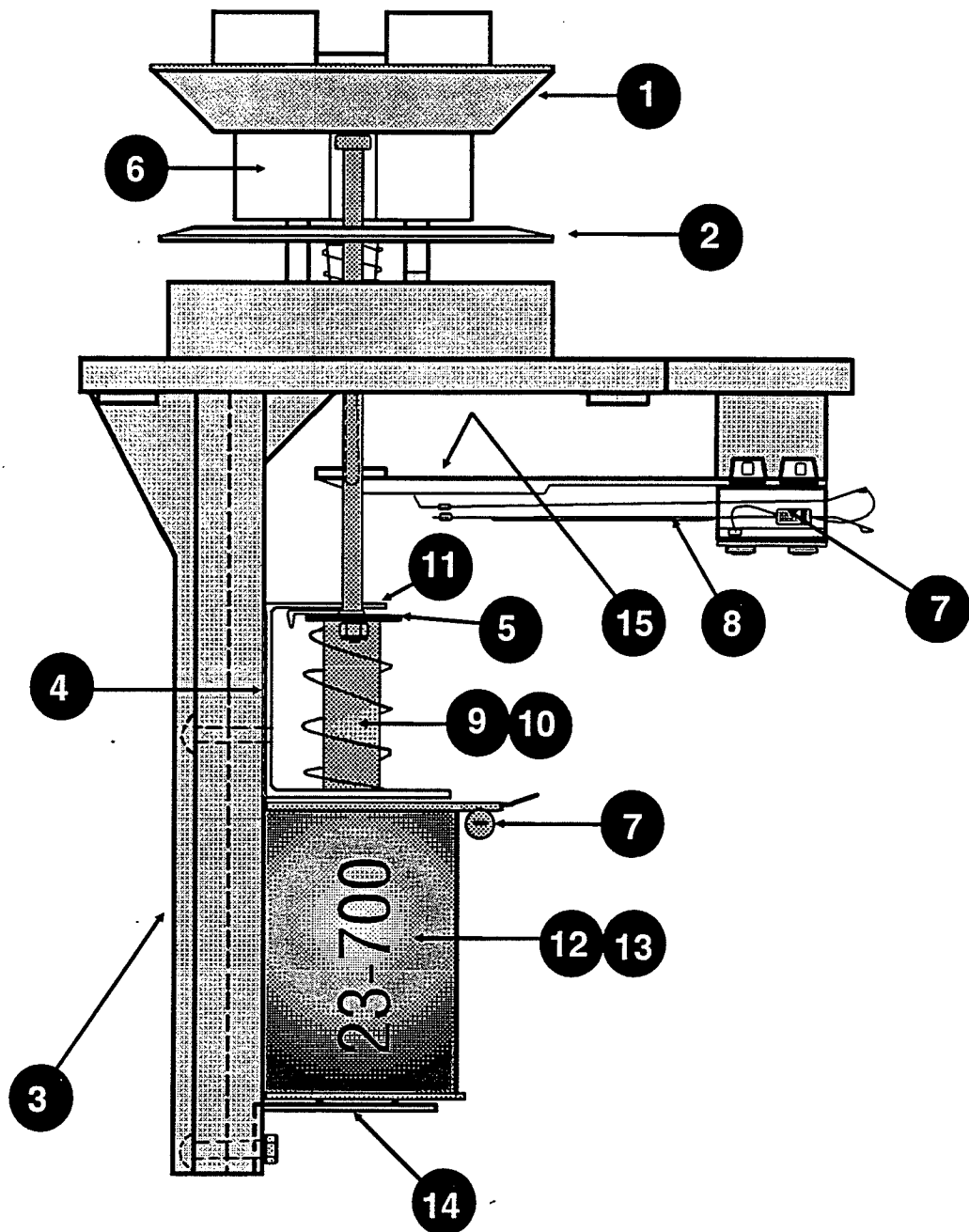
Item	Description	Part No.
1	Slingshot Bracket	515-5339-00
2	S. S. Arm & Tip Assembly	515-5340-00
3	Plunger & Link Assembly	515-5338-00
4	1/4 Retaining Ring (Qty. 2)	270-5002-00
5	Spring	266-5020-00
6	Coil 23-800, incl. Coil Sleeve	090-5001-02
7	Coil Sleeve	545-5031-00
8	Diode 1N4004 (Qty. 2)	112-5003-00
9	#8-32 X 1/4" Screw (Qty. 2)	232-5300-00
10	Slingshot Switch	180-5054-00
11	Tension Plate (Qty. 2)	535-5846-00
12	#4-40 X 1/2" Screw (Qty. 4)	237-5837-00
13	Coil Retainer	535-5203-03
14	Link	545-5062-00

Vertical Up-Kicker (VUK) 500-5839-00



Item	Description	Part No.
1	Switch	180-5116-00
2	Screw (Qty. 2)	237-5806-00
	Washer (Qty. 2)	244-5001-00
3	Protector	535-6539-00
4	Diode 1N4001	112-5001-00
5	Insulation	545-5431-00
6	Bracket	535-6607-01
7	Coil 25-1240, incl. Coil Sleeve	090-5034-01
8	Coil Sleeve	545-5076-00
9	Screw (Qty. 2)	232-5300-00
10	Plunger	515-5941-01
11	Spring	266-5020-00
12	Bumper Pad	545-5105-00
13	Bracket	535-5203-01

Turbo Bumper Assembly 500-5227-02†

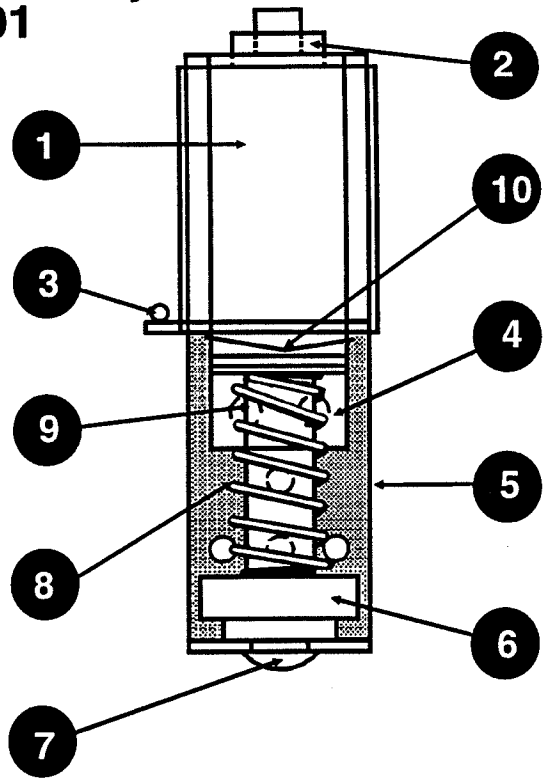


Item	Description	Part No.	Item	Description	Part No.
1	Rod & Ring Assembly	515-5085-00	9	Plunger	530-5062-00
2	Bumper Skirt	545-5098-00	10	Spring	266-5009-00
3	Bumper Housing	545-5100-00	11	Metal Yoke	535-5877-00
4	Plunger Bracket	535-5277-00	12	Coil 23-700, incl. Coil Sleeve	090-5022-02
5	Fiber Yoke	545-5120-00	13	Coil Sleeve	545-5031-00
6	Bumper Body	545-5197-00	14	Coil Stop Assembly	515-5088-00
7	Diode 1N4004 (Qty. 2)	112-5003-00	15	Spoon Switch	545-5542-00
8	Switch	180-5015-01	†	Bumper Cover (Clear) (Qty. 3)	550-5057-01

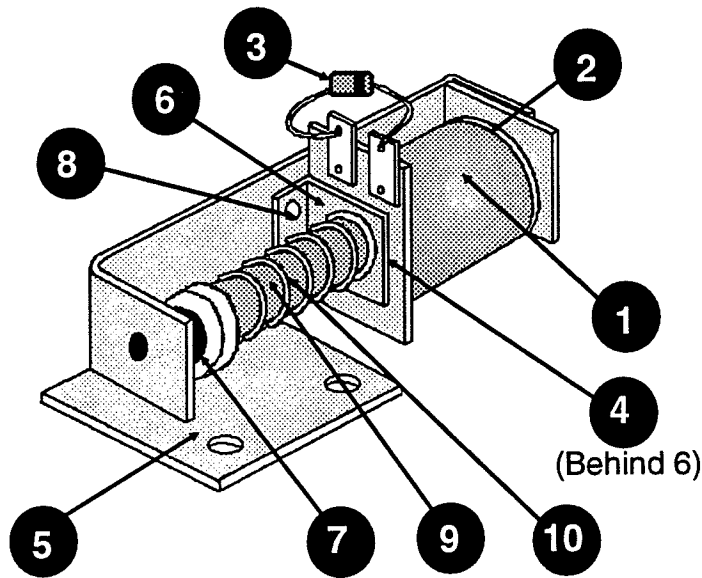
† Bumper Cover (not shown) is not included with above assembly, it must be ordered separately.

Skill Launch Assembly 500-5862-01

Item	Description	Part No.
1	Coil 23-800, incl. Coil Sleeve	090-5001-01
2	Coil Sleeve	545-5076-00
3	Diode 1N4004	112-5003-00
4	Bracket	535-5203-01
5	Frame	535-6730-00
6	Plunger Assembly	515-5000-02
7	Rubber Grommet	545-5105-00
8	Spring	266-5020-00
9	8-32 X ¼ SEMS (Qty. 2)	232-5300-04
10	Spring Washer	269-5002-00



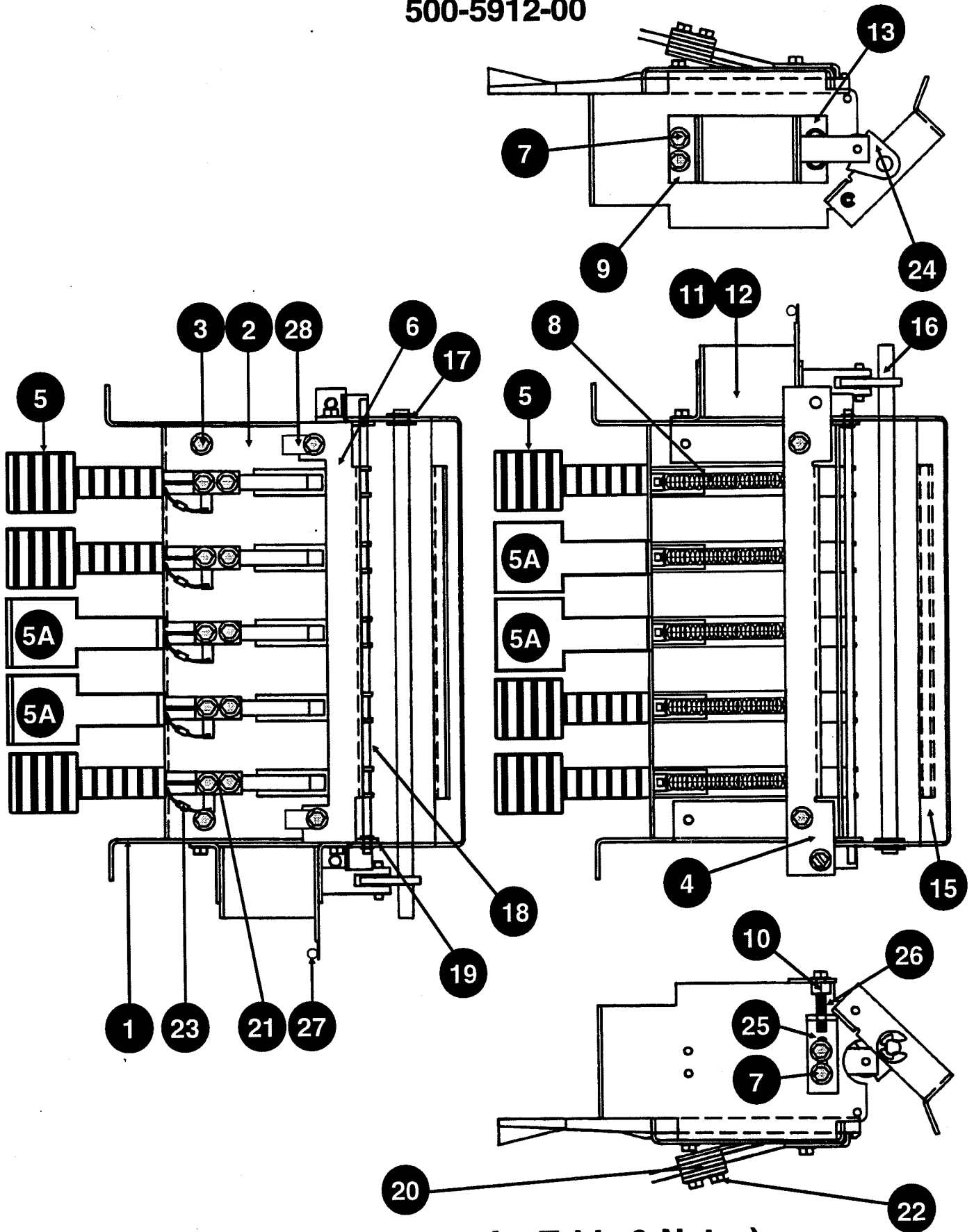
Knocker Assembly 500-5081-00



Item	Description	Part No.	Item	Description	Part No.
1	Coil 23-800, incl. Coil Sleeve	090-5001-01	6	Coil Retainer Bracket	535-5203-03
2	Coil Sleeve	545-5076-00	7	Bumper Pad	545-5105-00
3	Diode 1N4004	112-5003-00	8	#8-32 X ¼ " PH PAN SEMS (Qty. 2)	232-5300-00
4	Crescent Spring Washer	269-5002-00	9	Plunger Assembly	515-5000-02
5	Kickback/Knocker Bracket	535-5265-00	10	Spring	266-5020-00

Maverick 5-Bank Special D.T. Assembly

500-5912-00



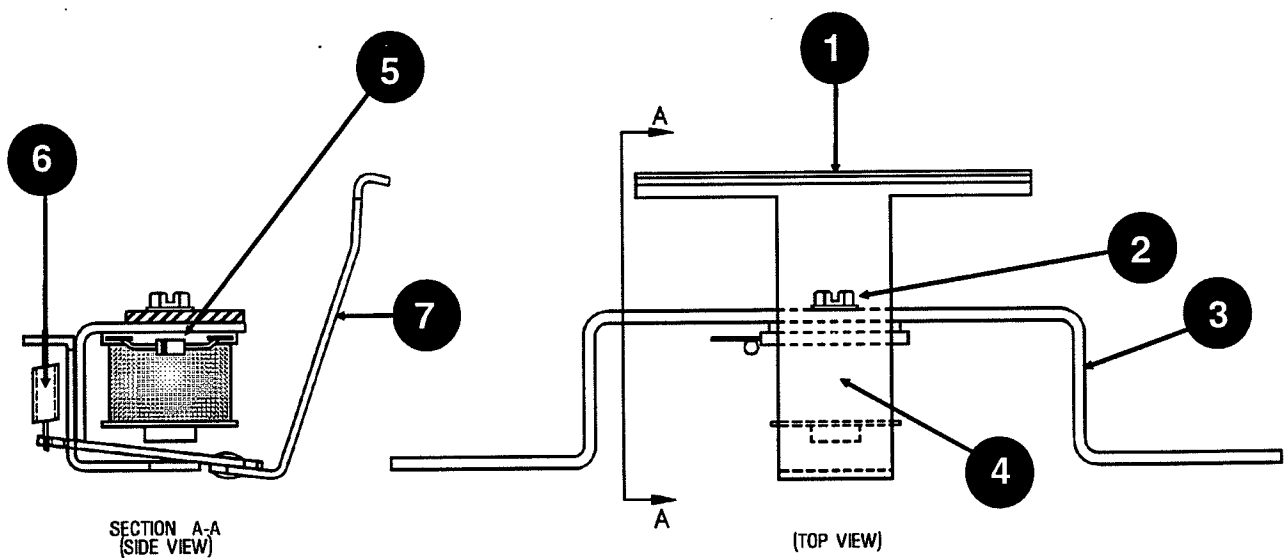
(See Next Page for Table & Notes)

Maverick 5-Bank Special D.T. Assembly 500-5912-00

Item	Description	Part No.	Item	Description	Part No.
1	Target End Plate (Qty. 2)	535-6162-00	14	Plunger/Link Assembly	515-5338-00
2	Target Frame	535-6159-05	15	Target Lift Bracket	535-6509-05
3	8-32 X 3/8 (Qty. 6)	237-5879-00	16	Target Shaft	530-5179-05
4	Spring Mount. Plate	535-6940-00	17	E-Ring (1/4")	270-5002-00
5	Thin Target (Specify Game)	545-5048-01	18	Pivot Shaft	530-5180-05
5A	Thick Target (Specify Game)	545-5533-01	19	E-Ring (1/8")	270-5000-00
6	Trgt. Retaining Brkt.	535-5042-05	20	Switch Assembly	180-5104-00
7	6-32 X 3/8 SHWHTCS Type 23 (Qty. 6)	237-5891-00	21	Switch Plate	535-5045-00
8	Target Reset Spring	265-5003-00	22	6-32 X 1/2	237-5878-00
9	Coil Support Bracket	535-6154-00	23	Diode 1N4001 on Switch	112-5001-00
10	8-32 Nyloc	240-5102-00	24	Plunger Link	545-5293-00
11	23-700 Coil for 5-Bank *	090-5022-02	25	Adjustment Bracket	535-6508-00
12	Coil Sleeve	545-5031-00	26	8-32 X 7/8 (1)	237-5890-00
13	Plunger Stop Bracket	515-5008-00	27	Diode 1N4004 on Coil	112-5003-00
* Coil Sleeve included with above Coil Part Numbers.			28	Cable Clamp (Qty. 2)	040-5000-23

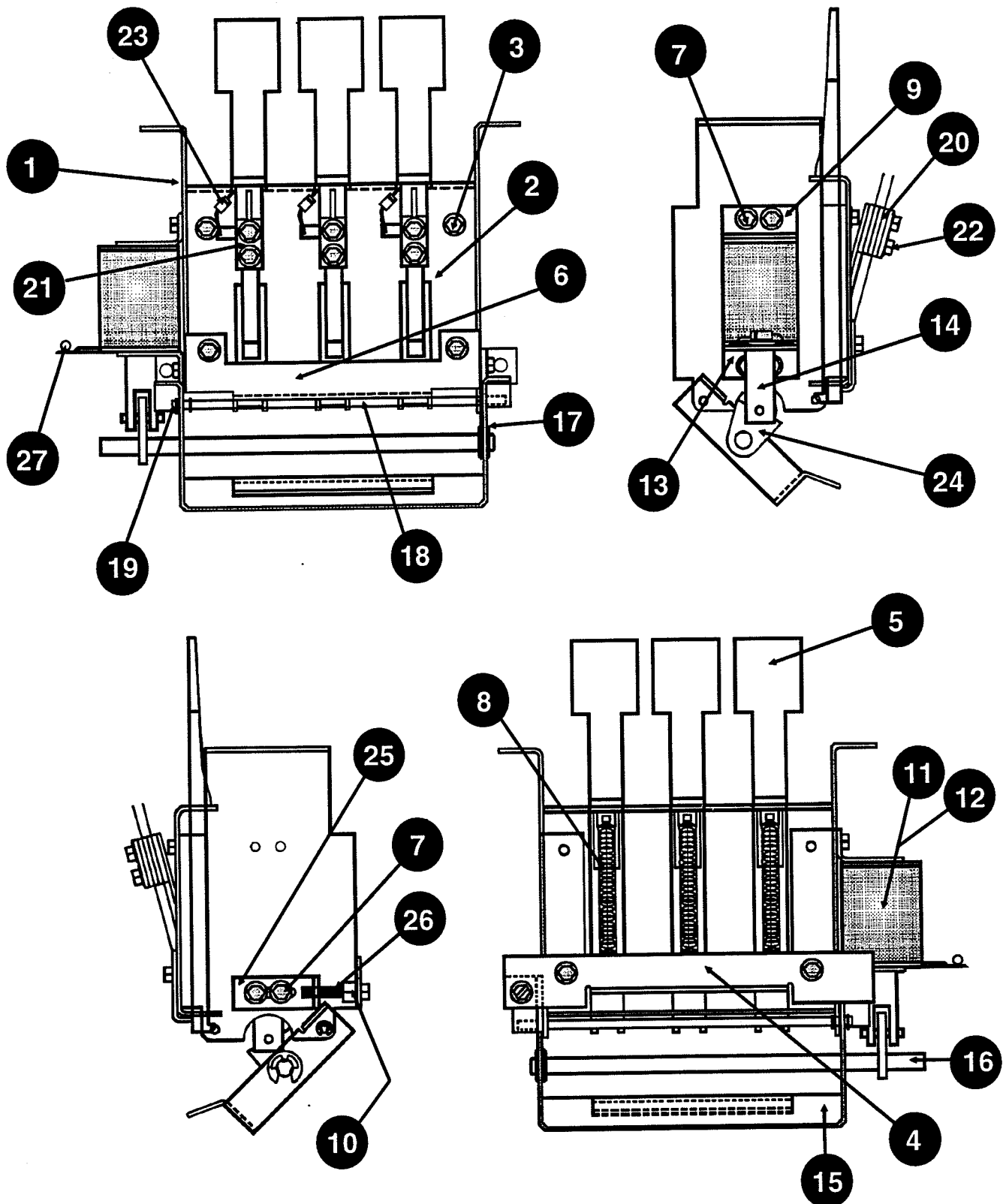
Autodrop Assembly 515-6111-00

(Attached to front of the Maverick 5-Bank Special D.T. Ass'y.)



Item	Description	Part No.	Item	Description	Part No.
1	Comb & Coil Assembly	515-6110-00	5	Diode 1N4004	112-5003-00
2	#8-32 X 3/8 HWH Screw	237-5903-00	6	Mini-Spring 15oz	265-5022-02
3	Mounting Bracket	535-6291-00	7	Comb Assembly	515-6109-00
4	Lock-Up Coil 32-1800	090-5031-00			

Drop Target 3-Bank & 4-Bank Assemblies 500-5621-03 (Center) & 500-5621-04 (Right) (3-Bank Assy. Shown)



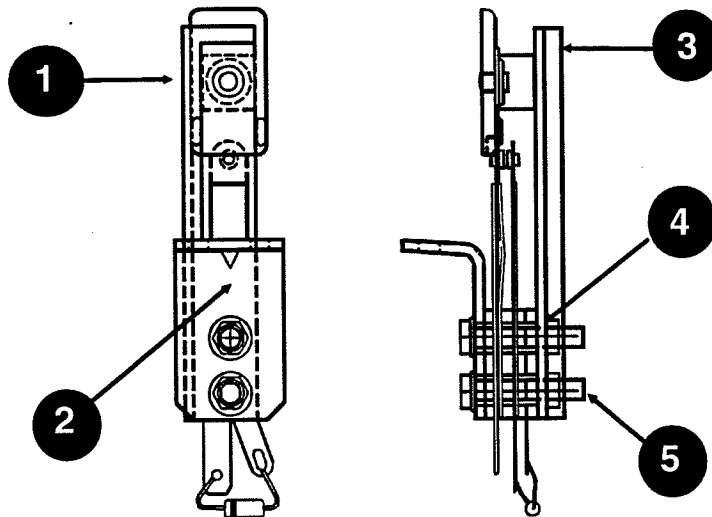
(See Next Page for Table & Notes)

Drop Target 3-Bank & 4-Bank Assemblies 500-5621-03 (Center) & 500-5621-04 (Right) †

Item	Description	Part No.	Item	Description	Part No.
1	Target End Plate (Qty. 2)	535-6162-00	13	Plunger Stop Bracket	515-5008-00
2	Target Frame for 5-Bank	535-6159-05	14	Plunger/Link Assembly	515-5338-00
2	Target Frame for 4-Bank	535-6159-04	15	Target Lift Bracket for 5-Bank	535-6509-05
2	Target Frame for 3-Bank	535-6159-03	15	Target Lift Bracket for 4-Bank	535-6509-04
3	8-32 X 3/8 (Qty. 6)	237-5879-00	15	Target Lift Bracket for 3-Bank	535-6509-03
4	Spring Mount. Plate for 5-Bank	535-6510-05	16	Target Shaft for 5-Bank	530-5179-05
4	Spring Mount. Plate for 4-Bank	535-6510-04	16	Target Shaft for 4-Bank	530-5179-04
4	Spring Mount. Plate for 3-Bank	535-6510-03	16	Target Shaft for 3-Bank	530-5179-03
5	Target (Specify Game)	545-5048-01	17	E-Ring (1/2")	270-5002-00
6	Trgt. Retaining Brkt. for 5-Bank	535-5042-05	18	Pivot Shaft for 5-Bank	530-5180-05
6	Trgt. Retaining Brkt. for 4-Bank	535-5042-04	18	Pivot Shaft for 4-Bank	530-5180-04
6	Trgt. Retaining Brkt. for 3-Bank	535-5042-03	18	Pivot Shaft for 3-Bank	530-5180-03
7	6-32 X 3/8 SHWHTCS Type 23 (Qty. 6)	237-5891-00	19	E-Ring (1/8")	270-5000-00
8	Target Reset Spring	265-5003-00	20	Switch Assembly	180-5104-00
9	Coil Support Bracket	535-6154-00	21	Switch Plate	535-5045-00
10	8-32 Nyloc	240-5102-00	22	6-32 X 1/2	237-5878-00
11	23-700 Coil for 5-Bank *	090-5022-02	23	Diode 1N4001 on Switch	112-5001-00
11	23-700 Coil for 4-Bank *	090-5022-02	24	Plunger Link	545-5293-00
11	23-800 Coil for 2 & 3-Bank *	090-5001-02	25	Adjustment Bracket	535-6508-00
12	Coil Sleeve	545-5031-00	26	8-32 X 7/8 (1)	237-5890-00
	* Coil Sleeve included with above Coil Part Numbers.		27	Diode 1N4004 on Coil	112-5003-00

† - Note: Table above shows common parts and unique parts for the 3, 4 & 5 Bank Drop Target Assemblies. The shaded areas (X-Bank D.T.) are not used in this game. Quantity is designated by bank size (see Dwg.) (e.g. 1 diode per target, thus if a 4-Bank is ordered, diode qty. is 4.) When ordering any part always reference game name for proper decals.

Stand-Up Target Assembly (Narrow Rectangular) 500-5857-08 (White)

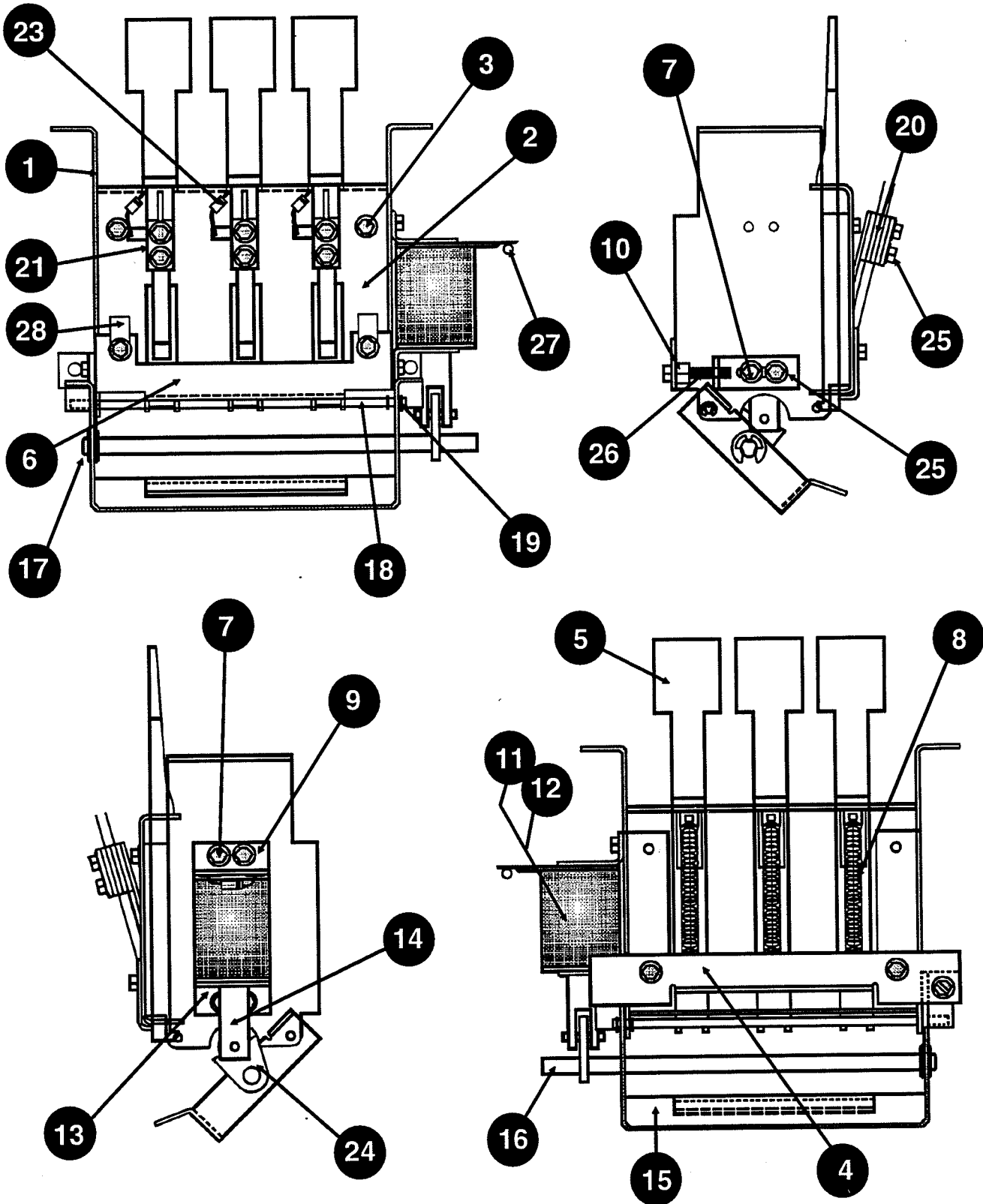


Target Color 500-5835-XX	
Clear	-01
Red	-02
Amber	-03
Green	-04
Blue	-05
Yellow	-06
Orange	-07
White	-08
Purple	-09

Item	Description	Part No.	Item	Description	Part No.
1	Switch & Target Ass'y	515-5967-08	3*	Back Plate *Optional	535-6452-00
2	Mounting Bracket	535-6896-00	4	6-32 Nyloc (Qty. 2)	240-5010-00
3	Back Plate	535-5116-00	5	6-32 X 3/4 HWH MS (Qty. 2)	237-5893-00

Drop Target 5-Bank Assembly 500-5799-05 (Left)

(3-Bank Assy. Shown)



(See Next Page for Table & Notes)

Drop Target 5-Bank Assembly 500-5799-05 (Left) †

Item	Description	Part No.	Item	Description	Part No.
1	Target End Plate (Qty. 2)	535-6162-00	13	Plunger Stop Bracket	515-5008-00
2	Target Frame for 5-Bank	535-6159-05	14	Plunger/Link Assembly	515-5338-00
2	Target Frame for 4-Bank	535-6159-04	15	Target Lift Bracket for 5-Bank	535-6509-05
2	Target Frame for 3-Bank	535-6159-03	15	Target Lift Bracket for 4-Bank	535-6509-04
3	8-32 X 3/8 (Qty. 6)	237-5879-00	15	Target Lift Bracket for 3-Bank	535-6509-03
4	Spring Mount. Plate for 5-Bank	535-6510-05	16	Target Shaft for 5-Bank	530-5179-05
4	Spring Mount. Plate for 4-Bank	535-6510-04	16	Target Shaft for 4-Bank	530-5179-04
4	Spring Mount. Plate for 3-Bank	535-6510-03	16	Target Shaft for 3-Bank	530-5179-03
5	Target (Specify Game)	545-5048-01	17	E-Ring (1/4")	270-5002-00
6	Trgt. Retaining Brkt. for 5-Bank	535-5042-05	18	Pivot Shaft for 5-Bank	530-5180-05
6	Trgt. Retaining Brkt. for 4-Bank	535-5042-04	18	Pivot Shaft for 4-Bank	530-5180-04
6	Trgt. Retaining Brkt. for 3-Bank	535-5042-03	18	Pivot Shaft for 3-Bank	530-5180-03
7	6-32 X 3/8 SHWHTCS Type 23 (Qty. 6)	237-5891-00	19	E-Ring (1/8")	270-5000-00
8	Target Reset Spring	265-5003-00	20	Switch Assembly	180-5104-00
9	Coil Support Bracket	535-6154-00	21	Switch Plate	535-5045-00
10	8-32 Nyloc	240-5102-00	22	6-32 X 1/2	237-5878-00
11	23-700 Coil for 5-Bank *	090-5022-02	23	Diode 1N4001 on Switch	112-5001-00
11	23-700 Coil for 4-Bank *	090-5022-02	24	Plunger Link	545-5293-00
11	23-800 Coil for 2 & 3-Bank *	090-5001-02	25	Adjustment Bracket	535-6508-00
12	Coil Sleeve	545-5031-00	26	8-32 X 7/8 (1)	237-5890-00
			27	Diode 1N4004 on Coil	112-5003-00
			28	Cable Clamp (Qty. 2)	040-5000-23

† - Note: Table above shows common parts and unique parts for the 3, 4 & 5 Bank Drop Target Assemblies. The shaded areas (X-Bank D.T.) are not used in this game. Quantity is designated by bank size (see Dwg.) (e.g. 1 diode per target, thus if a 5-Bank is ordered, diode qty. is 5.) When ordering any part always reference game name for proper decals.

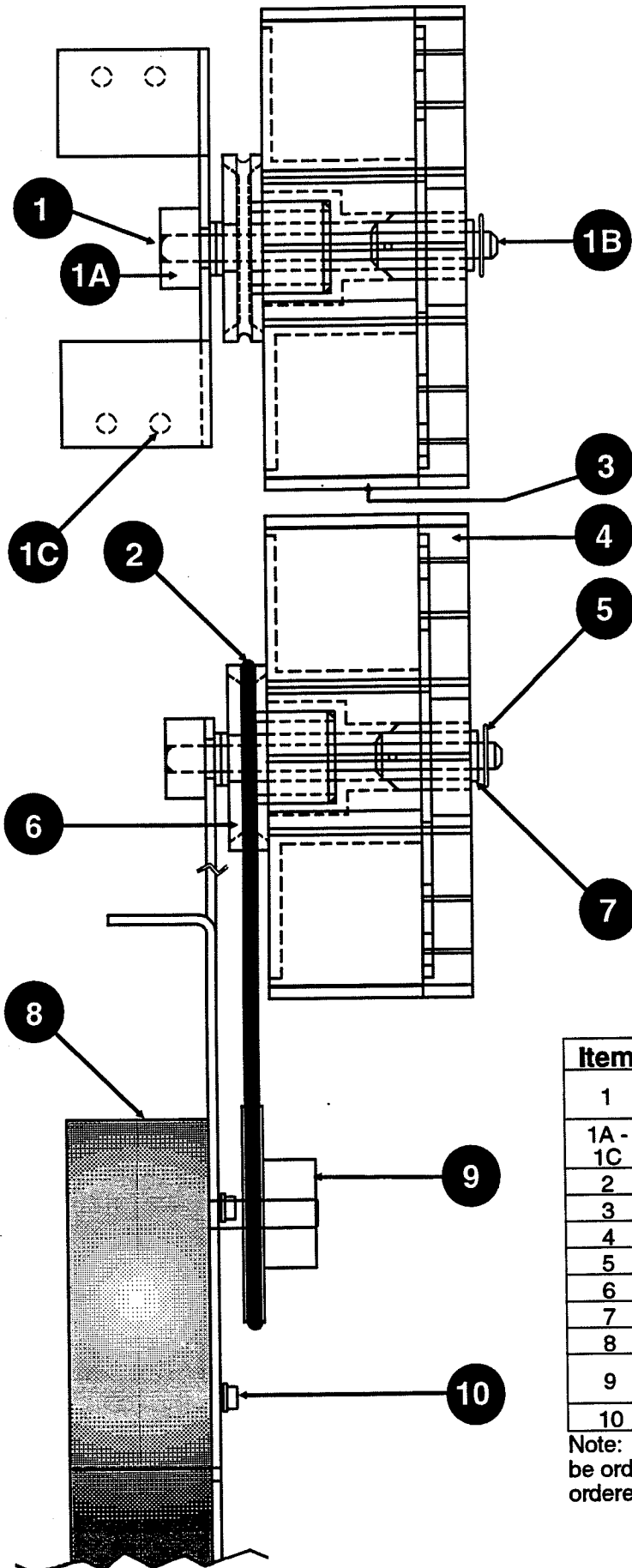
Drop Target Interchangeability Summary

Individual parts on the Left, Center, and Right Drop Targets (pages 58, 60 & 62) in this game are interchangeable. The differences are:

- ☞ For the **3-Bank Drop Targets**, the coil used is a **23-800**, Part N^o 090-5001-02. For the **4- & 5-Bank Drop Targets**, the coil used is a **23-700**, Part N^o 090-5022-00. All other parts are identical.
- ☞ On the **Maverick 5-Bank Special D.T.** (500-5912-00), the **Targets** (Item 5A), Part N^o 545-5533-01 is *unique* to that assembly. Also, the **Spring Mounting Plate** (Item 4), Part N^o 535-6940-00, is only used on this assembly. The **Autodrop Assembly**, Part N^o 515-6111-00, is only attached to the **Maverick 5-Bank Special Drop Target**. Cable Clamps are attached only to the 5-banks.
- ☞ With the other two types of Drop Targets, (3-, 4- & 5-Bank **Normal Targets**) Part N^os 500-5621-XX and 500-5799-XX, the **ONLY** difference is the **COIL POSITION** (note again the coil size for a 3-Bank vs. 4-/5-Bank Drop Targets).

Paddle Wheel Assembly 500-5854-01

Note:
 Not Shown and not apart of this assembly
 is the **Metal Ball-Lift Wheel Shield**,
 Part N° **535-6296-01**. It is mounted and
 located under the playfield directly below
 the paddle wheel.



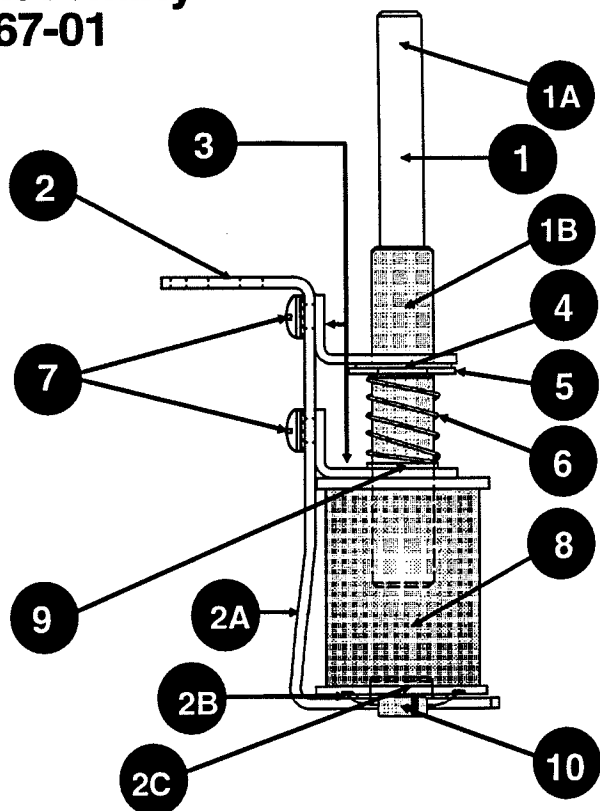
Item	Description	Part No.
1	Paddle Wheel Sub-Assembly (includes items 1A-1C below)	515-6094-01
1A - 1C	Paddle Wheel Hub, Shaft, and Mounting Bracket	See Note
2	Rubber O-Ring Drive	545-5513-00
3	Ball Lift Wheel Housing	545-5534-01
4	Pad. Whl. Ball-Lift Cover (Qty. 2)	545-5535-01
5	E-Ring for 1/4" Dia. Shaft	270-5002-00
6	Paddle Wheel Pulley	545-5516-00
7	Washers (Qty. 6)	242-5008-00
8	Paddle Wheel Motor	041-5036-00
9	Output Pulley (with Insert +Set Screw)	515-6614-00
10	8-32 X 3/8" HWH SERR TF (Qty. 4)	237-5903-00

Note: Item names are given for reference only and cannot be ordered. For these items, the sub-assembly must be ordered.

Ball Lock Assembly 500-5867-01

Item	Description	Part No.
1	Plunger Sub-Assembly (Includes items 1A-1B)	515-6119-01
1A - 1B	Metal Ball Lock Plunger, Nylon Plunger	See Note
2	Mounting Bracket Sub-Ass'y (Includes items 2A-2C)	515-6118-00
2A - 2C	Mounting Bracket, Shading Ring, Core Stop	See Note
3	Coil Bracket (Qty. 2)	535-5203-01
4	Nyliner, 7/16 Shaft	545-5418-00
5	E-Ring, 7/16 Shaft	270-5005-00
6	Spring	266-5020-00
7	#8-32 X 1/4 PPHW/SEMS (Qty. 4)	232-5300-00
8	Coil 27-1500, incl. Coil Sleeve	090-5004-00
9	Coil Sleeve	545-5411-00
10	Diode 1N4004	112-5003-00

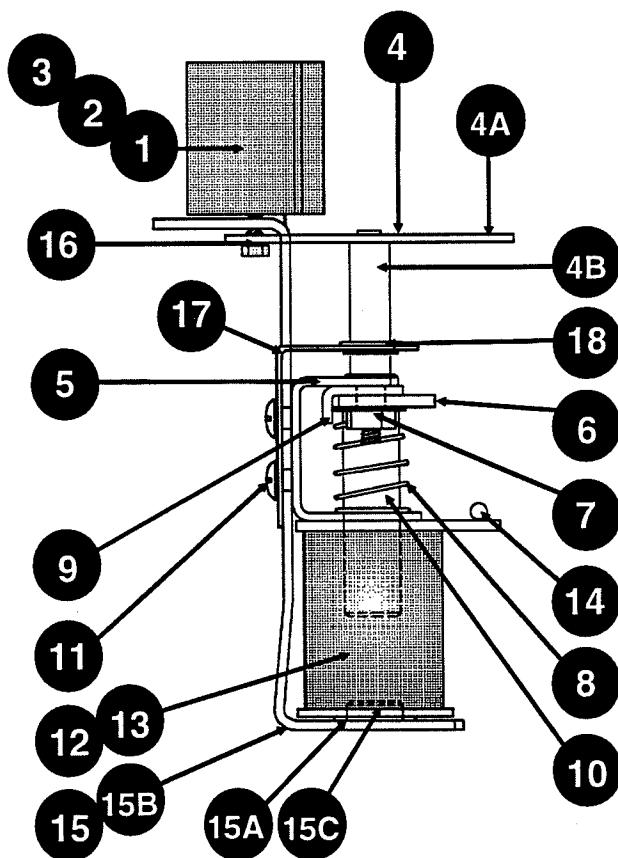
Note: Item names are given for reference only and cannot be ordered. For these items, the sub-assembly must be ordered.



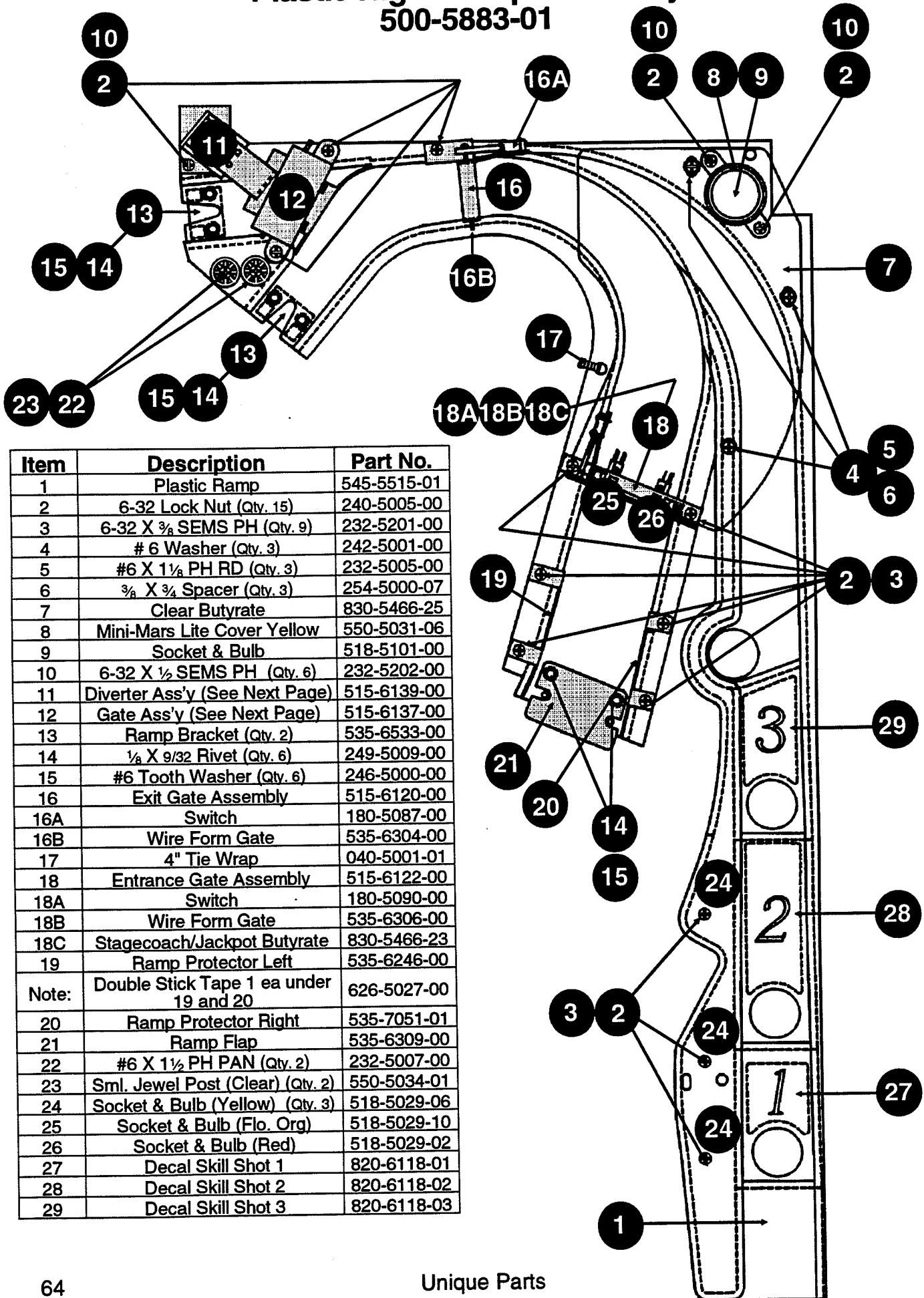
Paddle Wheel / Left Orbit Ball Deflector 500-5886-01

Item	Description	Part No.
1	Ball Deflector	545-5552-00
2	#4-40X 1-1/2 P PH Screw (Qty. 2)	237-5934-00
3	Compression Spring (Qty. 2)	266-5045-00
4	Top Plate Sub-Assembly (Includes items 4A-4B)	515-6149-01
4A - 4B	Top Plate, Support Shaft	See Note
5	Coil Support Bracket	535-7073-00
6	Fiber Yoke	545-5120-00
7	#6-32 Stop Nut (Qty. 2)	240-5005-00
8	Spring	266-5009-00
9	Metal Yoke	535-5877-01
10	Plunger	530-5062-00
11	#8-32 X 1/4 PPHW SEMS (Qty. 3)	232-5300-00
12	Coil 27-1500, incl. Coil Sleeve	090-5004-00
13	Coil Sleeve	545-5411-00
14	Diode 1N4004	112-5003-00
15	Mounting Bracket Sub-Ass'y (Includes items 13A-13B)	515-6150-00
15A - 15C	Shading Ring, Mounting Bracket, Core Stop	See Note
16	#4-40 Nyloc	240-5303-00
17	Deflector Bearing Plate	535-7158-00
18	ø.312 Nyliner PN #5L1-FF (Qty. 2)	545-5485-00

Note: Item names are given for reference only and cannot be ordered. For these items, the sub-assembly must be ordered.

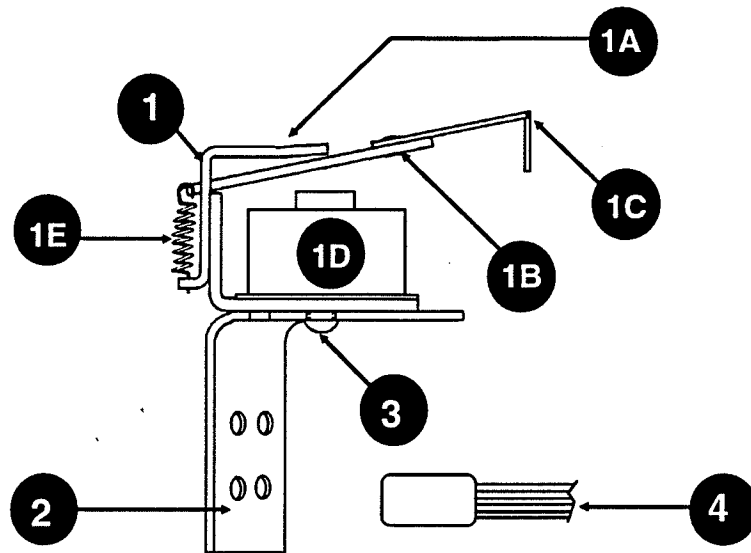


Plastic Right Ramp Assembly 500-5883-01



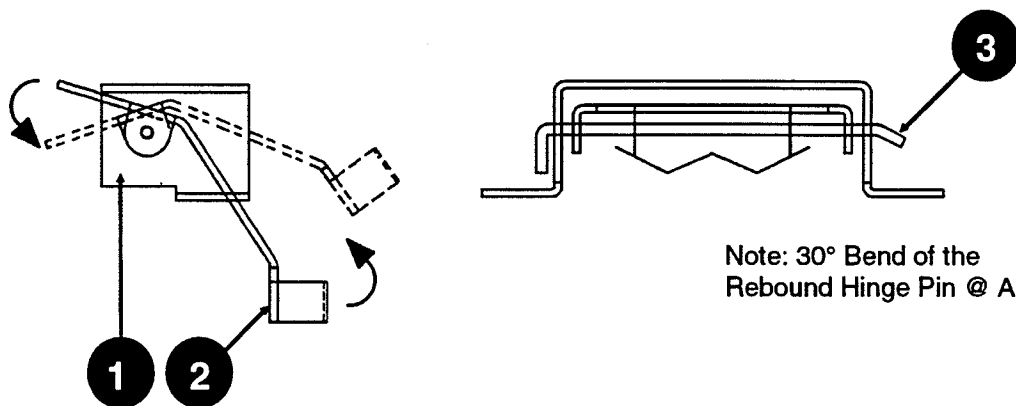
Item	Description	Part No.
1	Plastic Ramp	545-5515-01
2	6-32 Lock Nut (Qty. 15)	240-5005-00
3	6-32 X 3/8 SEMS PH (Qty. 9)	232-5201-00
4	#6 Washer (Qty. 3)	242-5001-00
5	#6 X 1 1/8 PH RD (Qty. 3)	232-5005-00
6	3/8 X 3/4 Spacer (Qty. 3)	254-5000-07
7	Clear Butyrate	830-5466-25
8	Mini-Mars Lite Cover Yellow	550-5031-06
9	Socket & Bulb	518-5101-00
10	6-32 X 1/2 SEMS PH (Qty. 6)	232-5202-00
11	Diverter Ass'y (See Next Page)	515-6139-00
12	Gate Ass'y (See Next Page)	515-6137-00
13	Ramp Bracket (Qty. 2)	535-6533-00
14	1/8 X 9/32 Rivet (Qty. 6)	249-5009-00
15	#6 Tooth Washer (Qty. 6)	246-5000-00
16	Exit Gate Assembly	515-6120-00
16A	Switch	180-5087-00
16B	Wire Form Gate	535-6304-00
17	4" Tie Wrap	040-5001-01
18	Entrance Gate Assembly	515-6122-00
18A	Switch	180-5090-00
18B	Wire Form Gate	535-6306-00
18C	Stagecoach/Jackpot Butyrate	830-5466-23
19	Ramp Protector Left	535-6246-00
Note:	Double Stick Tape 1 ea under 19 and 20	626-5027-00
20	Ramp Protector Right	535-7051-01
21	Ramp Flap	535-6309-00
22	#6 X 1 1/2 PH PAN (Qty. 2)	232-5007-00
23	Sml. Jewel Post (Clear) (Qty. 2)	550-5034-01
24	Socket & Bulb (Yellow) (Qty. 3)	518-5029-06
25	Socket & Bulb (Flo. Org)	518-5029-10
26	Socket & Bulb (Red)	518-5029-02
27	Decal Skill Shot 1	820-6118-01
28	Decal Skill Shot 2	820-6118-02
29	Decal Skill Shot 3	820-6118-03

11 Plastic Ramp Diverter Assembly 515-6139-00



Item	Description	Part No.	Item	Description	Part No.
1	Gate Lift Coil & Plate (Includes 1A-1E)	515-6203-02	2	Diverter Support Bracket	535-7055-00
1A - 1C	Frame, Armature, and Armature Extension	See Note	3	8-32 PHMS SEMS (Loctite @ Ass'y)	232-5301-00
1D	Lock-Up Coil, 32-1800 (does not have a Coil Sleeve) Diode 1N4004 (Not Shown)	090-5031-00 112-5003-00	4	Wiring Harness	036-5363-08
1E	Spring	265-5024-00	Note: Item names are given for reference only and cannot be ordered. For these items, the sub-assembly must be ordered.		

12 Plastic Ramp Gate Assembly (works with above Diverter Ass'y) 515-6137-00

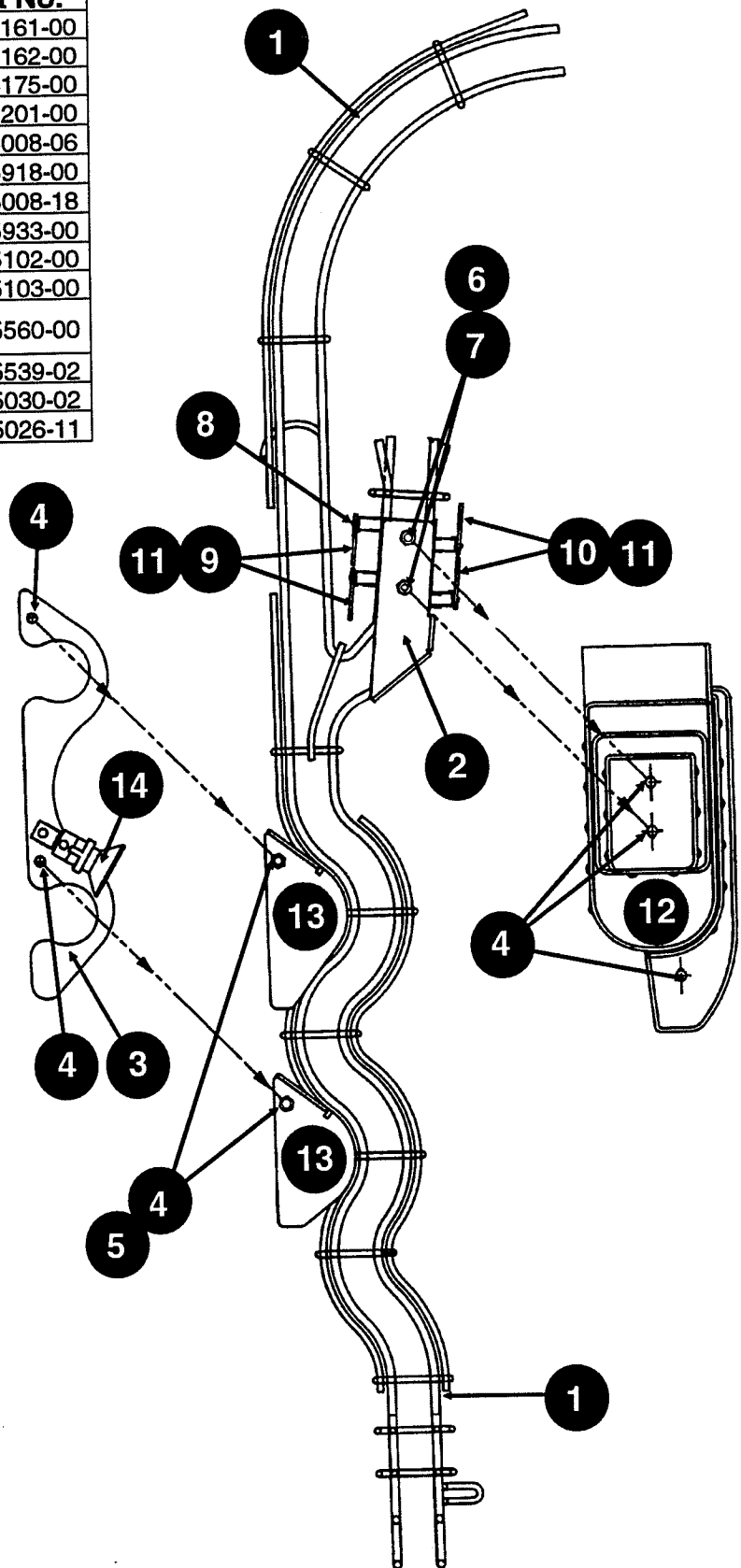


Note: 30° Bend of the
Rebound Hinge Pin @ Ass'y.

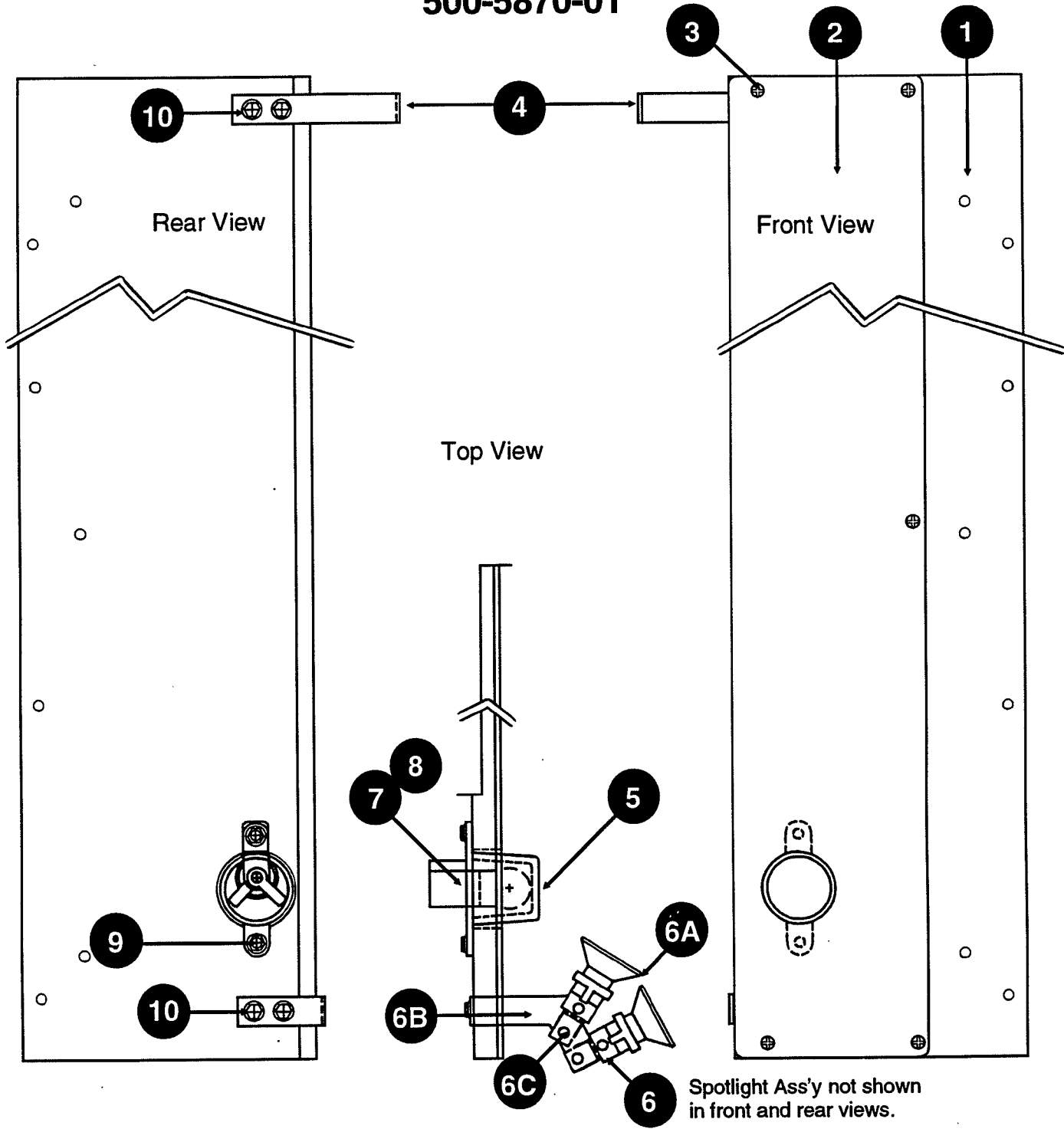
Item	Description	Part No.	Item	Description	Part No.
1	Gate Bracket	535-7052-00	3	Rebound Hinge Pin	535-5372-01
2	Flap Gate	535-7053-00	Note: 35° to 40° Actuation		

Wire Ramp with OPTO's Assembly 500-5884-00

Item	Description	Part No.
1	Wire Ramp	515-6161-00
2	Steel Plate	535-7162-00
3	Butyrate Spotlight Sub. Assy.	515-6175-00
4	#6-32 X 3/8 PH (Qty. 7)	232-5201-00
5	3/4 Hex Spacer (Qty. 2)	254-5008-06
6	#6-32 X 1/2 Flathead PH (Qty. 2)	237-5918-00
7	2" Hex Spacer (Qty. 2)	254-5008-18
8	#4-40 X 3/8 PHMS (Qty. 8)	237-5933-00
9	OPTO Transmitter (Qty. 2)	520-5102-00
10	OPTO Receiver (Qty. 2)	520-5103-00
11	Fishpaper (1 behind each OPTO) (Qty. 4)	545-5560-00
12	Screened Paddle Boat	545-5539-02
13	Mini-Mars Snap-in Red (Qty. 2)	550-5030-02
14	Lamplight Deflector	518-5026-11



Backpanel Assembly 500-5870-01

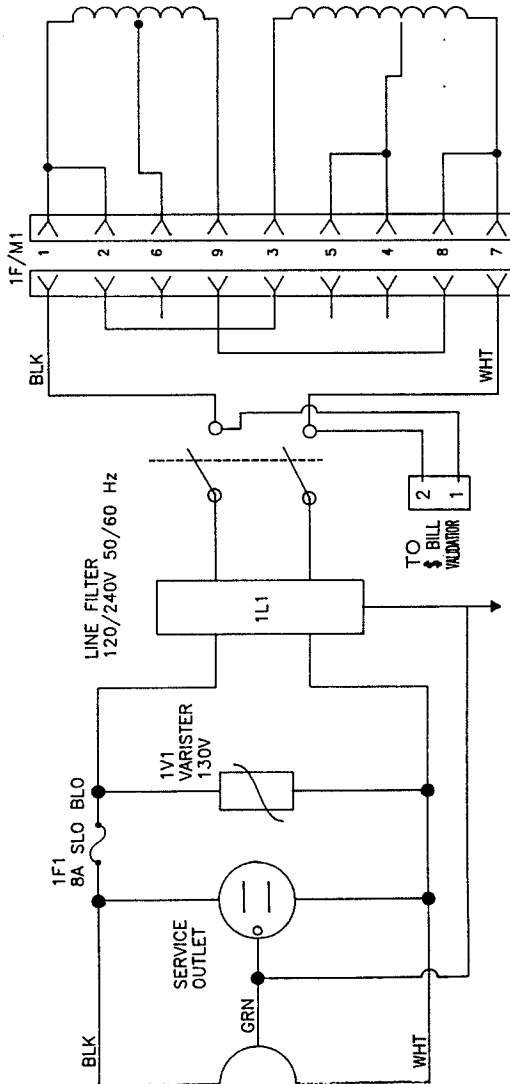


Spotlight Ass'y not shown in front and rear views.

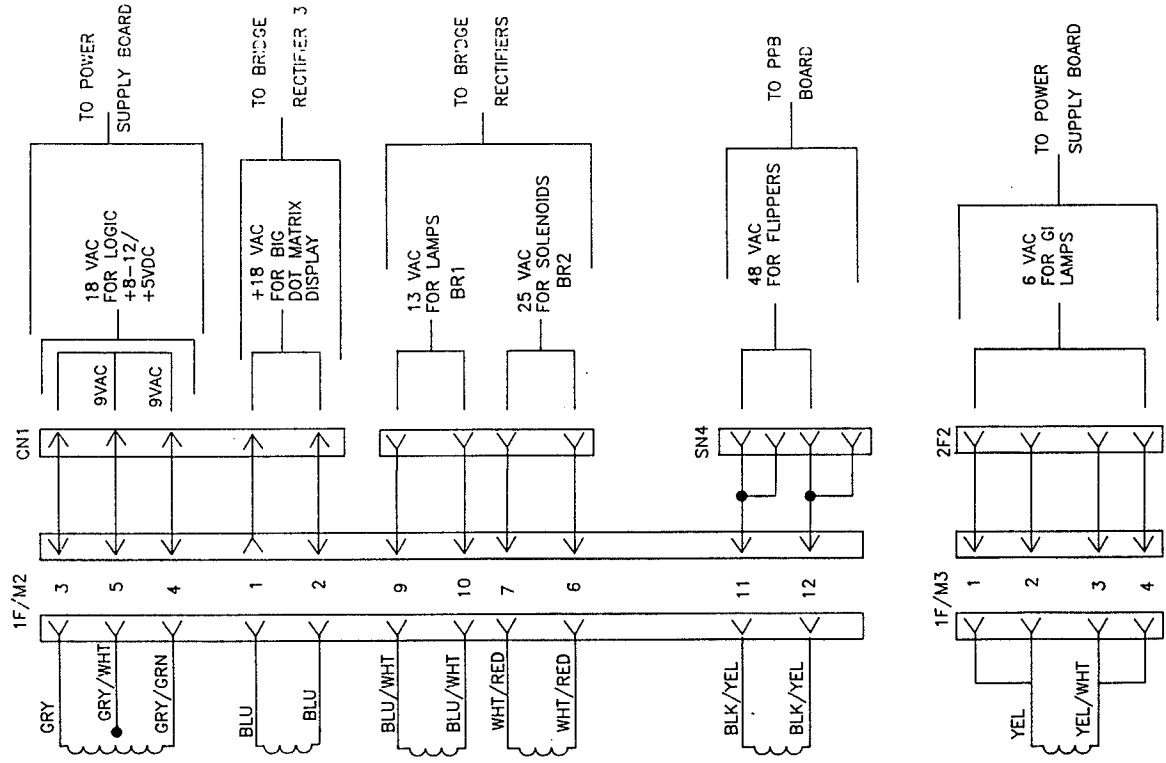
Item	Description	Part No.	Item	Description	Part No.
1	Back Panel	525-5371-01	6A	Lamp Light Deflector (Qty. 2)	518-5026-11
2	Back Panel Butyrate	830-5466-16	6B	Spotlight Bracket	535-7089-00
3	#6 X 1/2 PH PAN (Qty. 5)	232-5001-00	6C	Rivet (Qty. 2)	249-5008-00
4	Ramp Support Bracket	535-7057-00	7	Socket	077-5101-00
5	Mini-Mars (Flo. Org.)	550-5031-10	8	#89 Bulb	165-5000-89
6	Spotlight Assembly	500-5893-00	9	#6 X 1/2 HXW Screw (Qty. 2)	234-5001-02
Spotlight Ass'y incl. items 6A-6C in the next column.			10	#8 X 1/2 HXW Screw (Qty. 4)	234-5101-05

THIS CONFIGURATION FOR 115V

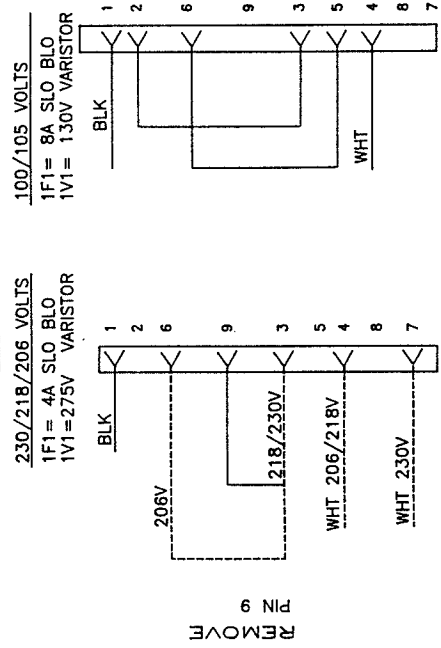
FOR LOWER LINE VOLTAGES
OR 220 VOLT OPERATION
SEE SAMPLES BELOW

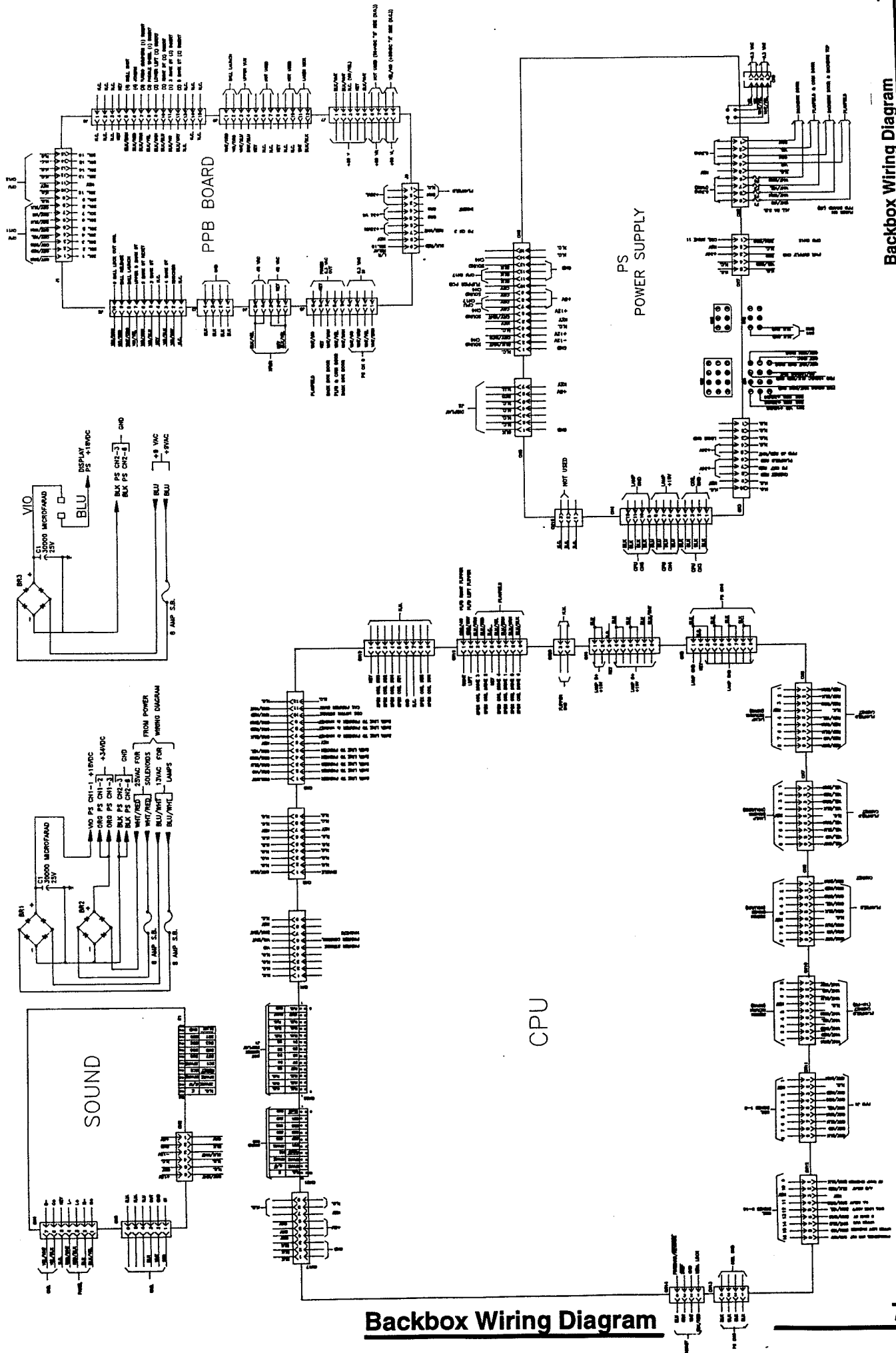


1T1



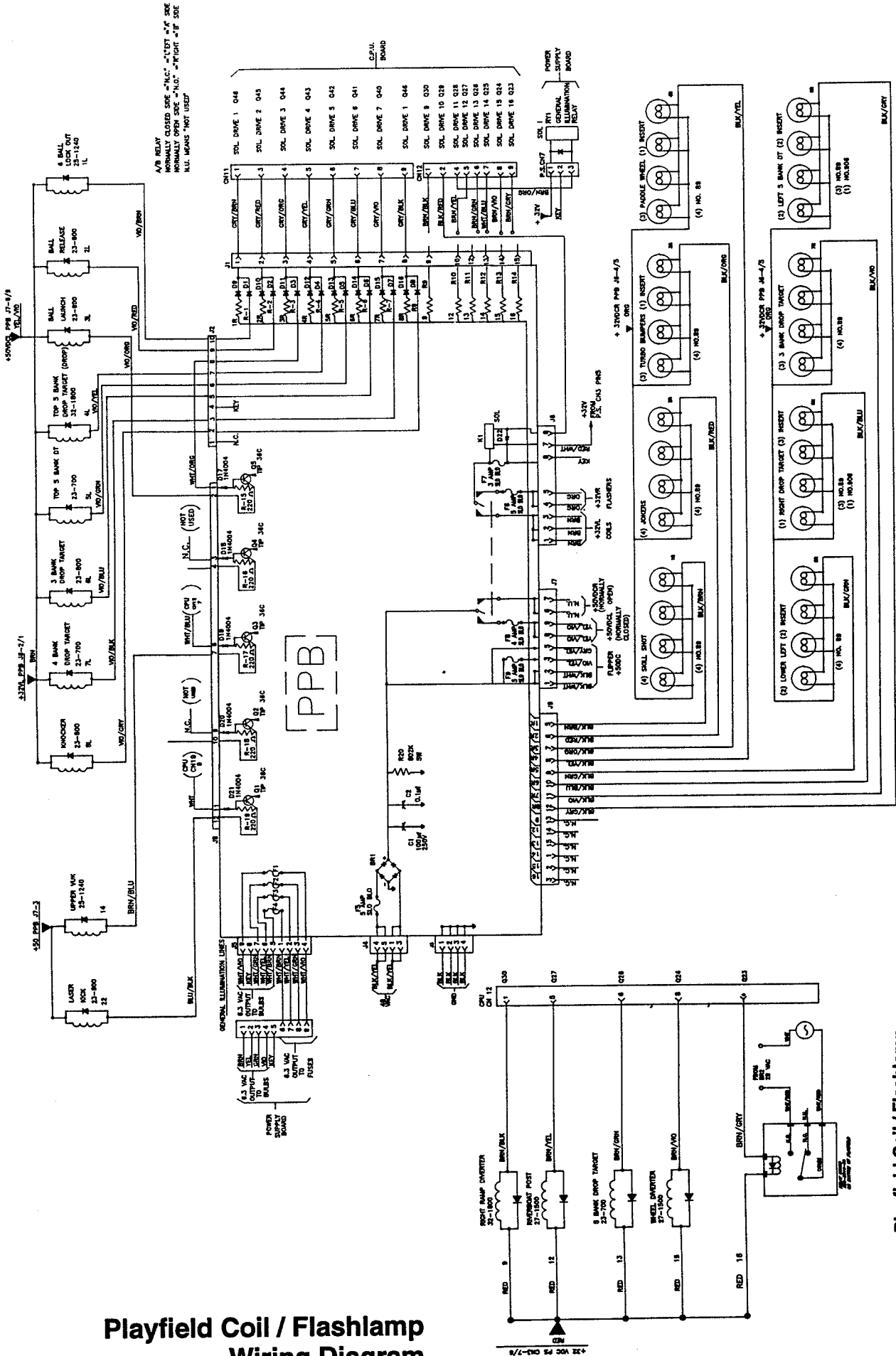
JUMPER FOR VOLTAGE VARIATION





Backbox Wiring Diagram

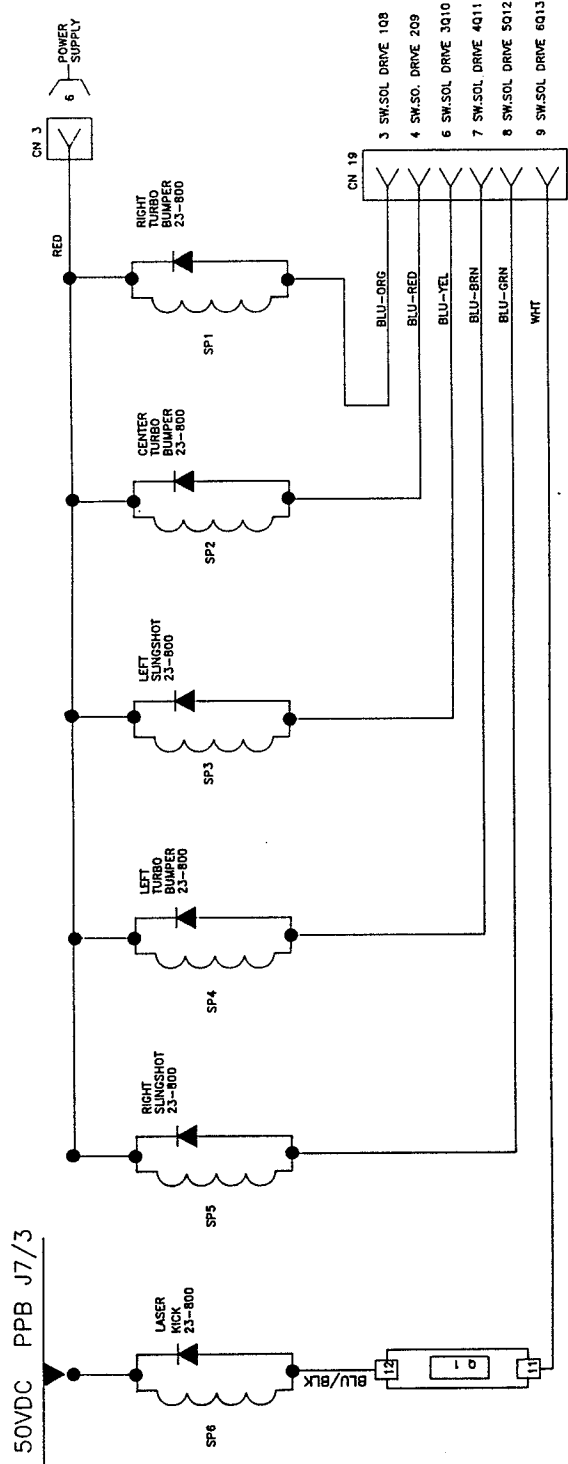
Playfield Coil / Flashlamp Wiring Diagram



Playfield Coil / Flashlamp Wiring Diagram

DATE: 11-14-88
 DRAWN: MAVERICK
 CHECKED: MAVERICK
 APPROVED: MAVERICK
 PART: 11-14-88

REV.	DESCRIPTION	BY	DATE

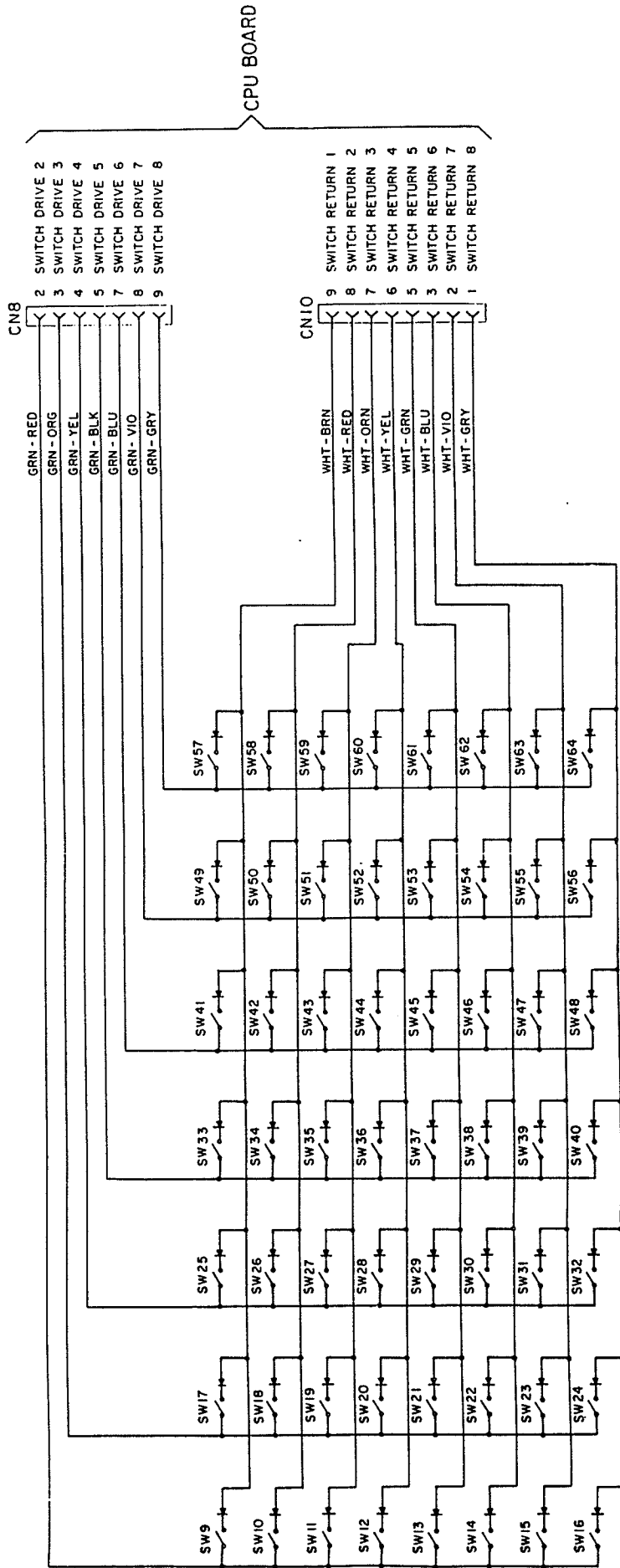


Switch Matrix No. & Description	Part No.
50 Right Ramp Left Stand-Up Target	515-5967-08
51 Right Slingshot	180-5054-00
52 Right Ramp Kick Big Bottom	500-5706-00
53 Right Ramp Skill Shot 1	500-5706-00
54 Right Ramp Skill Shot 2	500-5706-00
55 Right Ramp Skill Shot 3	180-5126-00
56 Paddle Wheel Transmitter Receiver	520-5102-00
57 Entrance OPTO	520-5103-00
58 Left Outlane	500-5707-00
59 Right Ramp Right Stand-Up Target	515-5967-08
60 Left Slingshot	180-5054-00
61 Right Orbit Rollover	500-5707-00
62 Left Orbit Rollunder	180-5099-00
63 Left Return Lane	500-5707-00
64 Lower Left Flipper Cabinet via O7 (Transistor) on SSFB	180-5124-00
65 Lower & Upper Right Flipper Cabinet via O5 (Transistor) on SSFB	180-5124-00

Switch Matrix No. & Description	Part No.
35 Right 4-Bank D.T. Upper Middle 9*	180-5104-00
36 Right 4-Bank Drop Target Top 9*	180-5104-00
37 Top Lane Left	500-5707-00
38 Top Lane Middle Left	500-5707-00
39 Top Lane Middle Right	500-5707-00
40 Top Lane Right	500-5707-00
41 Left Turbo Bumper	180-5015-01
42 Center Turbo Bumper	180-5015-01
43 Right Turbo Bumper	180-5099-00
44 Right Ramp Entrance Gate	520-5102-00
45 Paddle Wheel Transmitter Receiver	520-5103-00
46 Front Lock OPTO	520-5102-00
47 Back Lock OPTO	520-5103-00
48 Right Return Lane	500-5706-00
49 Not Used	
49 Right Outlane	500-5706-00

Switch Matrix No. & Description	Part No.
18 Lower Left 5-Bank D.T. Lwr. MID J*	180-5104-00
19 Lower Left 5-Bank D.T. Middle O*	180-5104-00
20 Lower Left 5-Bank D.T. Upr. MID K*	180-5104-00
21 Lower Left 5-Bank D.T. Top A*	180-5104-00
22 Center 3-Bank D.T. Left 8*	180-5104-00
23 Center 3-Bank D.T. Middle 8*	180-5104-00
24 Center 3-Bank D.T. Right 8*	180-5104-00
25 Upr. LT 5-Bank R/O D.T. BOT. 3*	180-5104-00
26 Upr. LT 5-Bank R/O D.T. Lwr. MID 4*	180-5104-00
27 Upr. LT 5-Bank R/O D.T. Middle 5*	180-5104-00
28 Upr. LT 5-Bank R/O D.T. Upr. MID 6*	180-5104-00
29 Upr. LT 5-Bank R/O D.T. Top 7*	180-5104-00
30 Captive Ball Stand-Up Target	515-5967-08
31 Vertical Up-Kicker (VUK)	180-5116-00
32 Upper Right Ramp Exit Gate	180-5087-00
33 Right 4-Bank Drop Target Bottom 9*	180-5104-00
34 Right 4-Bank D.T. Lower Middle 9*	180-5104-00

Switch Matrix No. & Description	Part No.
11 Plumb Tilt (See Item 17, Cabinet Parts, Page 41)	
12 4th Coin (On Coin Door)	
13 Credit Button (Left of Coin Door)	500-5072-02
14 Right Coin (On Coin Door)	180-5024-00
15 Center Coin (On Coin Door)	180-5024-00
16 Left Coin (On Coin Door)	180-5024-00
17 Slam IN	180-5022-00
18 Extra Ball Button (Under 03)	180-5073-00
19 Not Used	
20 Not Used	
21 #1 (Left) Ball Trough	180-5119-00
22 #2 Ball Trough	180-5119-00
23 #3 Ball Trough	180-5119-00
24 #4 Ball Trough	180-5119-00
25 #5 (Right) Ball Trough	180-5118-00
26 Shooter Lane	180-5100-01
27 Lower Left 5-Bank D.T. Bottom 10*	180-5104-00



Playfield Switch Wiring Diagram

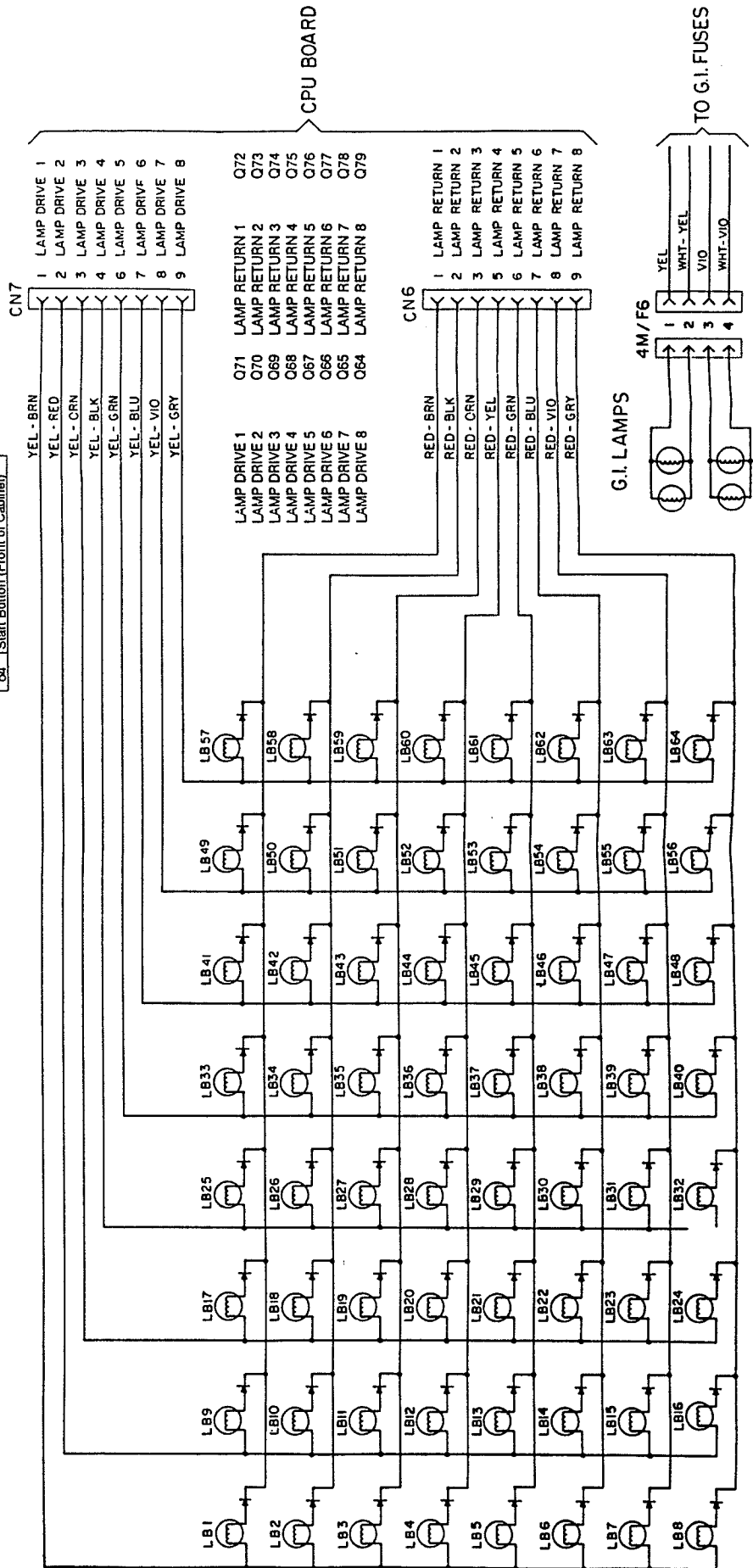
74 Playfield Switch Wiring Diagram

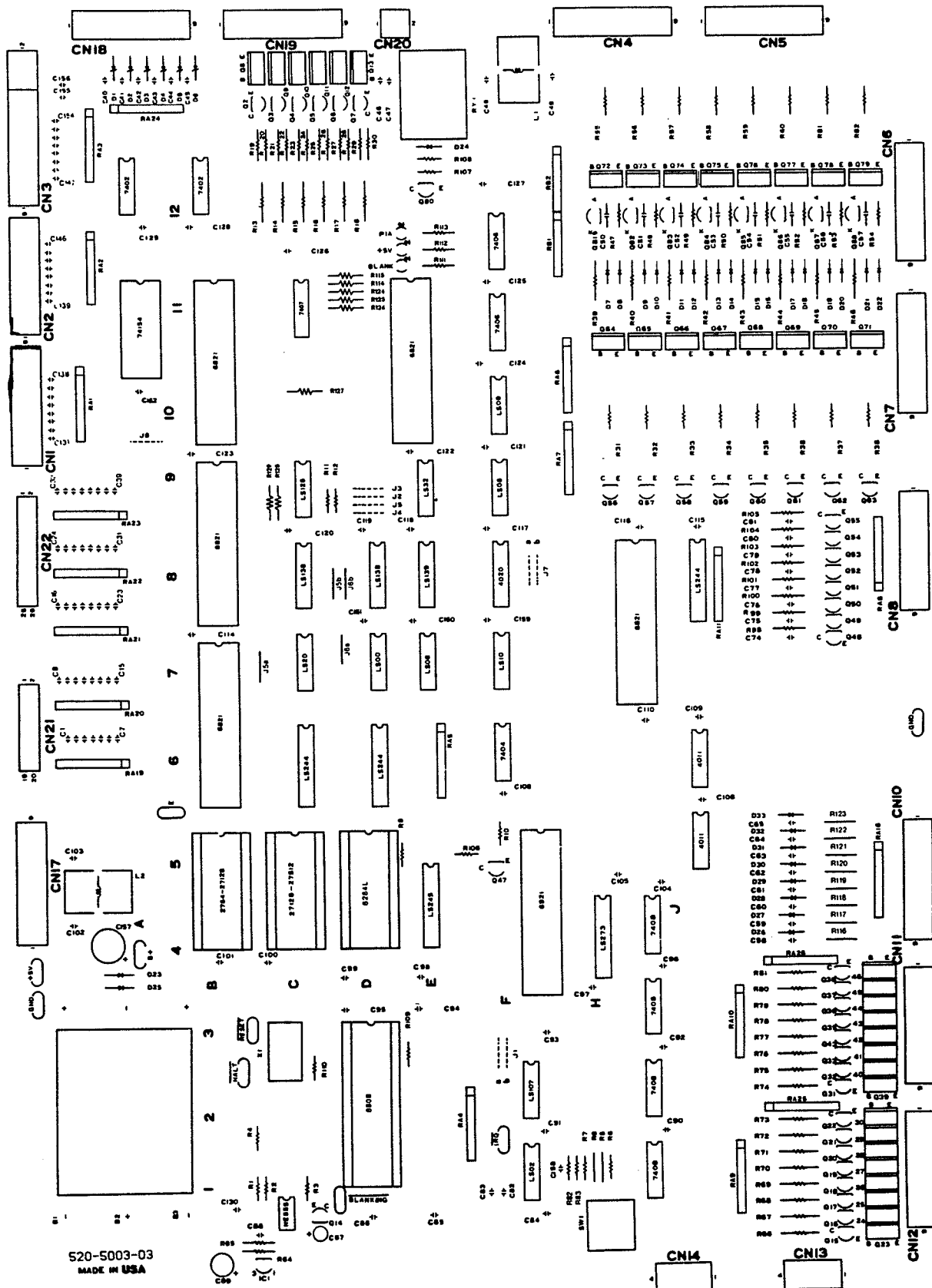
Lamp Matrix No.	Description
01	Bank Heist (Captive Ball)
02	Two of Hearts 2♥
03	Three of Hearts 3♥
04	Four of Hearts 4♥
05	Five of Hearts 5♥
06	Six of Hearts 6♥
07	Jack of Spades 1♠ (21)
08	Raise / Fold
09	Shoot Again
10	Lock #3 (Joker)
11	Special
12	Jackpot (RT Ramp Enter Right)
13	Not Used
14	Spot Card (Left)
15	Spot Card (Right)
16	1 (One) Pair
17	21 When Lit

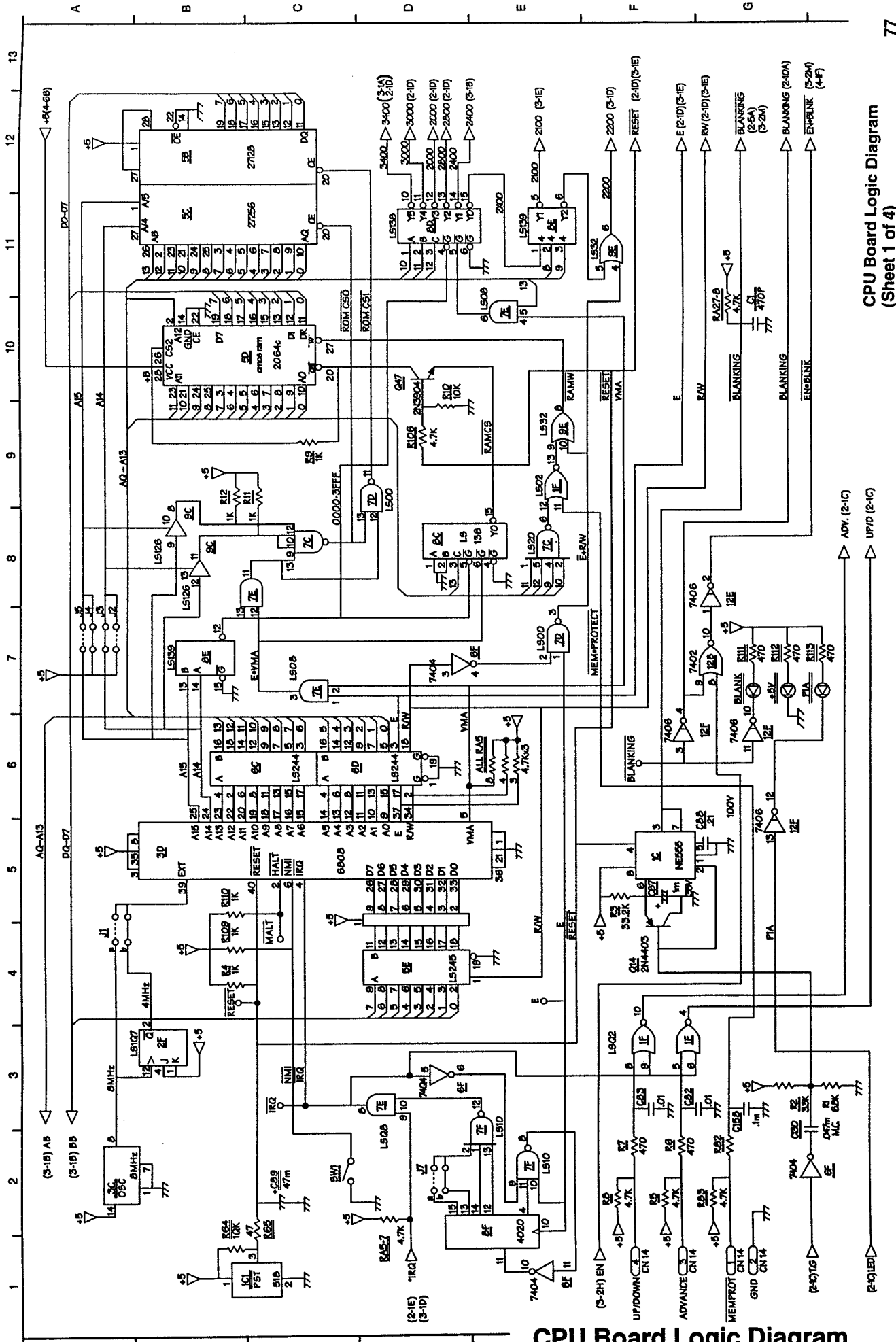
Lamp Matrix No.	Description
18	Poker Championship
19	Lock #2 (Joker)
20	Coop's Cash
21	Lauren Belle
22	Bank Heist
23	Angel's Revenge
24	Stage Coach
25	(Left) Turbo Bumper
26	(Center) Turbo Bumper
27	(Right) Turbo Bumper
28	Lock #1 (Joker)
29	5 Mill (1) (Left)
30	5 Mill (2) (Middle Left)
31	5 Mill (3) (Middle Right)
32	5 Mill (4) (Right)
33	Skill Shot #1 (Bottom)
34	Skill Shot #2 (Center)

Lamp Matrix No.	Description
35	Skill Shot #3 (Top)
36	Not Used
37A	Ten of Clubs 10♣
37B	Ten of Diamonds 10♦
38	Extra Ball
39	3 (Right Orbit) (#4)
40	3 (Ramp Enter) (#3)
41	Top Lane 1 ♠
42	Top Lane 2 ♠
43	Top Lane 3 ♠
44	Top Lane 4 ♠
45	Ace of Spades A♠
46A	Ten of Spades 10♠
46B	Ten of Hearts 10♥
47	3 (VUK) (#2)
48	3 (Left Orbit) (#1)
49	Ramp Joker #1 (Bottom)

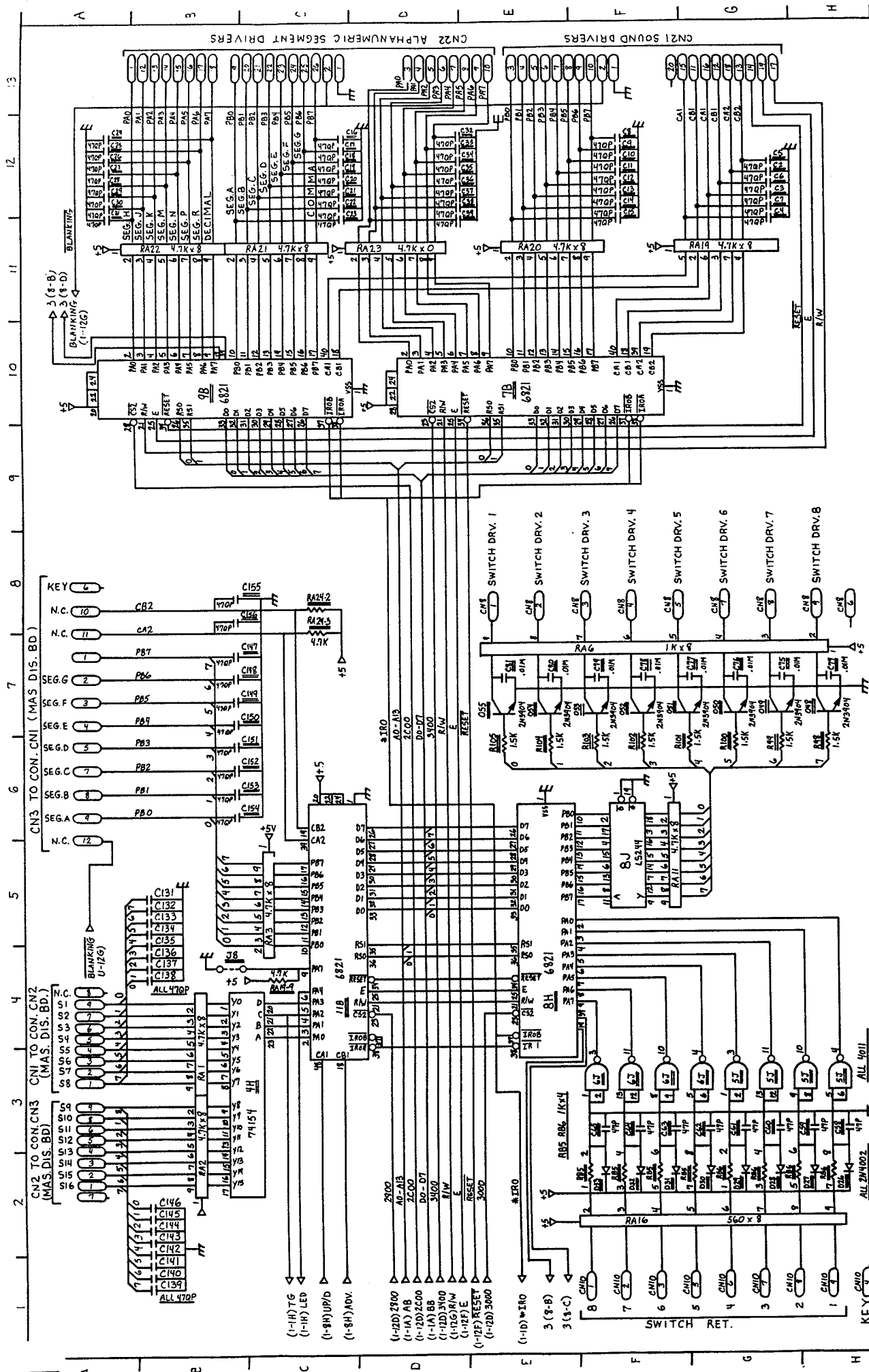
Lamp Matrix No.	Description
50	Ramp Joker #2 (Middle)
51	Ramp Joker #3 (Top)
52	Stagecoach (Right Ramp Enter Left)
53	Seven of Clubs 7♣
54	Seven of Diamonds 7♦
55A	Six of Clubs 6♣
55B	Six of Diamonds 6♦
56	Seven of Hearts 7♥
57	4-Of-A-Kind
58	3-Of-A-Kind
59	Straight
60	Royal Flush
61	Two of Diamonds 2♦
62	Two of Clubs 2♣ (Stand-Up Left)
63*	Extra Ball Burton (Front of Cab.)
64*	Start Burton (Front of Cabinet)





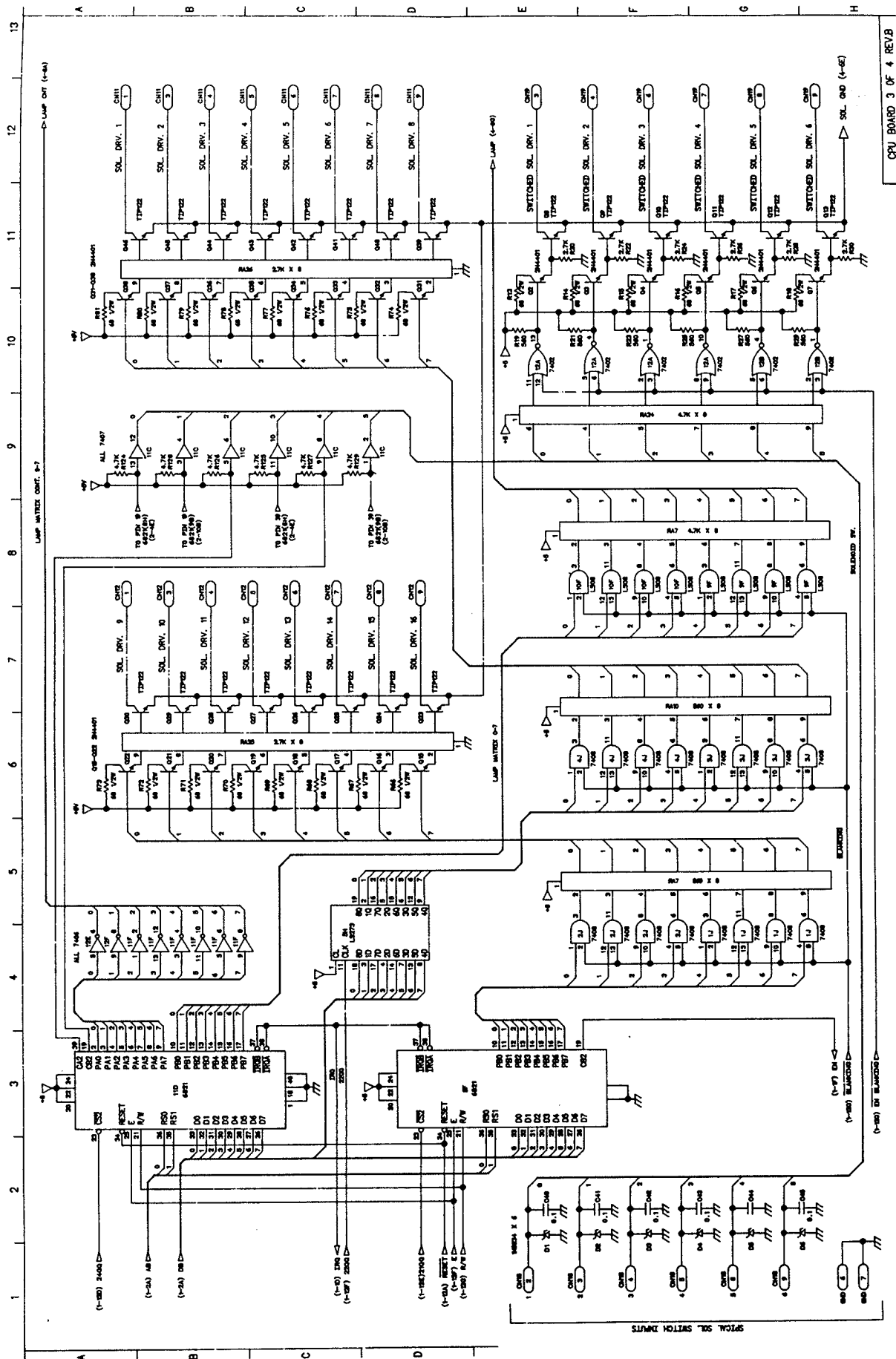


**CPU Board Logic Diagram
(Sheet 1 of 4)**



CPU Board Logic Diagram (Sheet 2 of 4)

CPU Board Logic Diagram (Sheet 2 of 4)

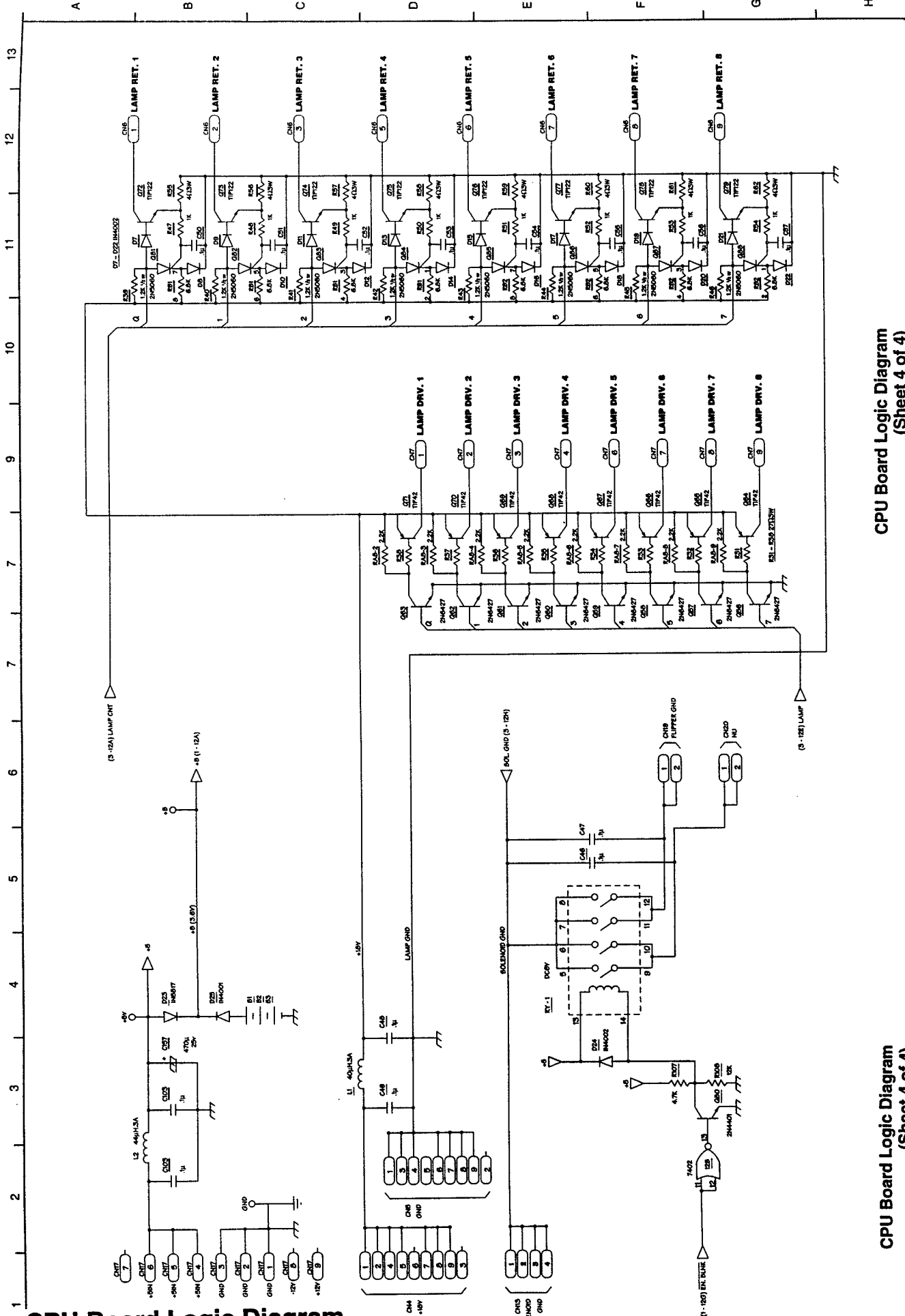


CPU BOARD 3 OF 4 REV.B

CPU Board Logic Diagram
(Sheet 3 of 4)

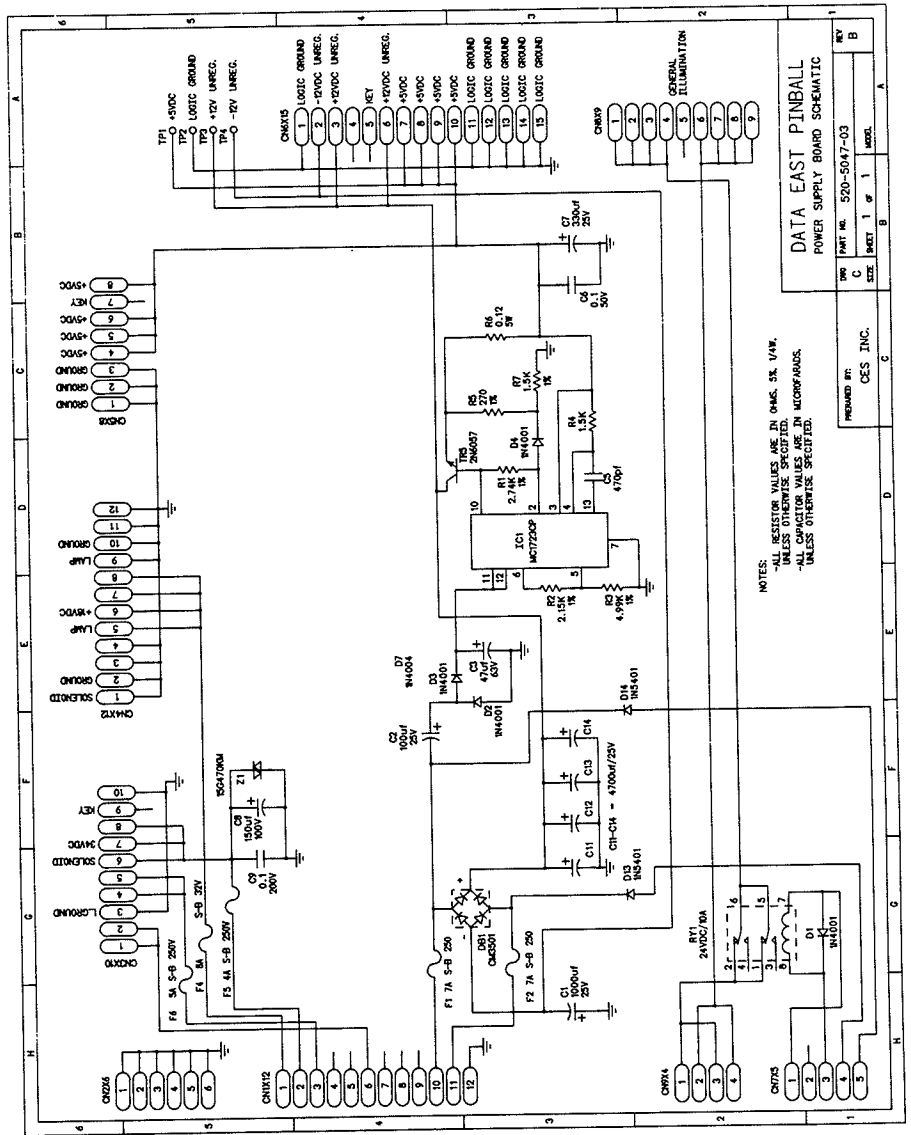
CPU Board Logic Diagram
(Sheet 3 of 4)

CPU Board Logic Diagram (Sheet 4 of 4)



CPU Board Logic Diagram
(Sheet 4 of 4)

CPU Board Logic Diagram
(Sheet 4 of 4)



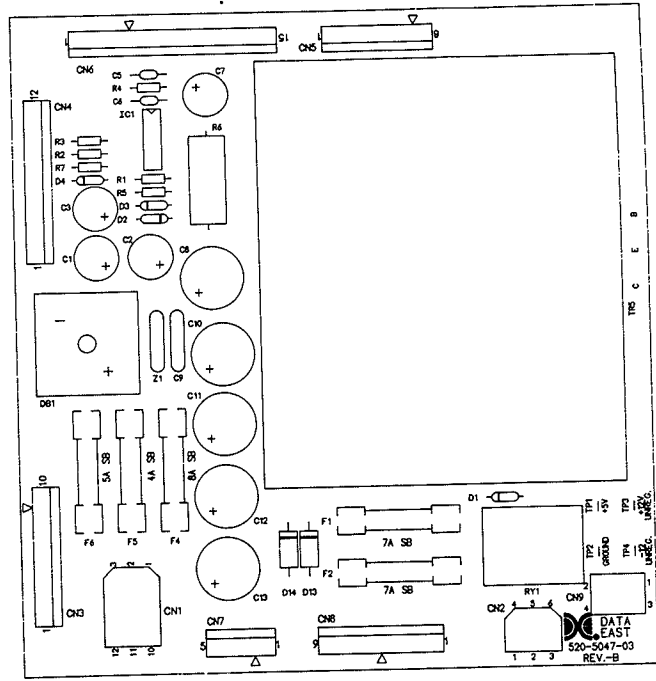
NOTES:
 -ALL RESISTOR VALUES ARE IN OHMS, 5% 1/4W.
 -ALL CAPACITOR VALUES ARE IN MICROFARADS.
 -UNLESS OTHERWISE SPECIFIED.

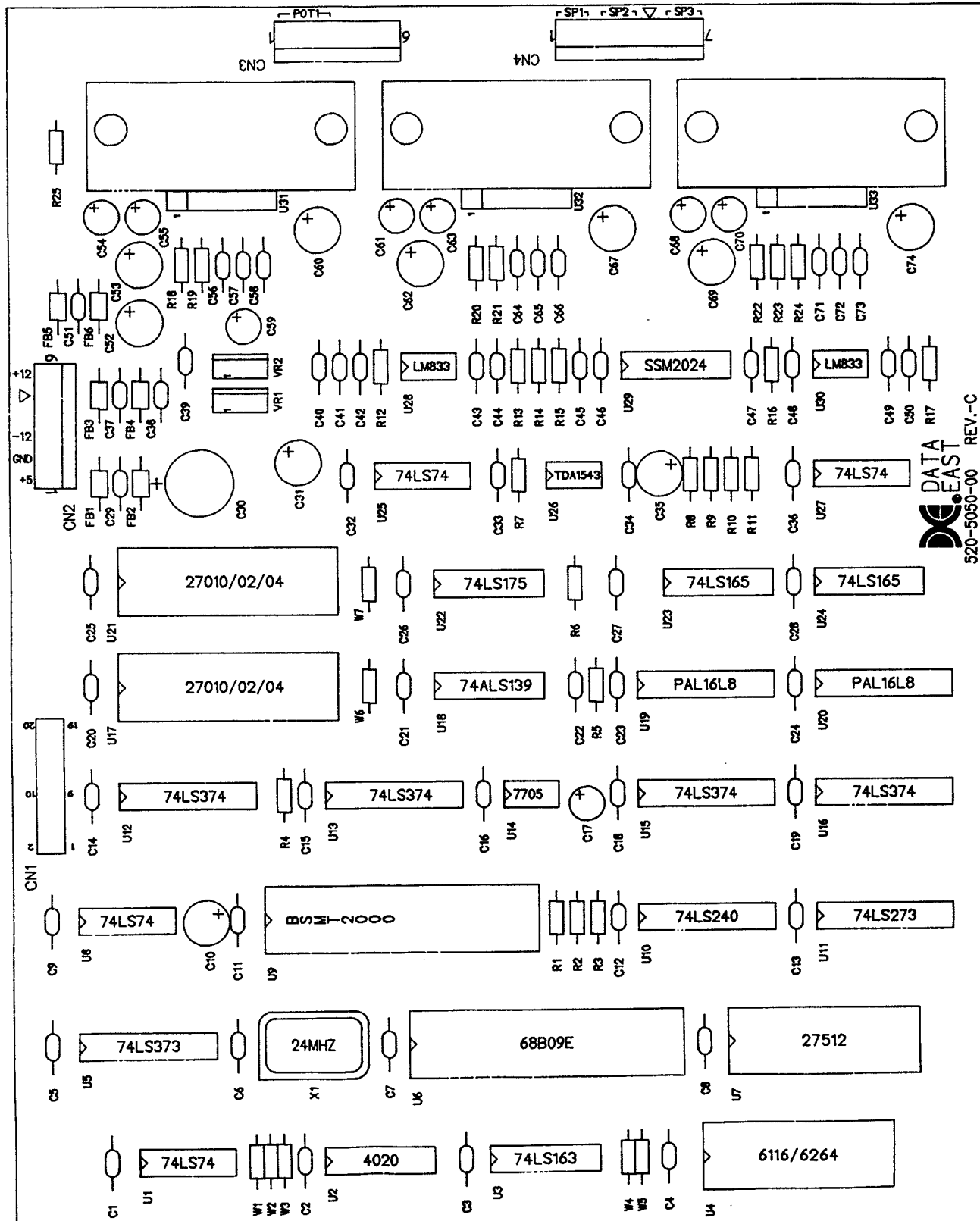
DATA EAST PINBALL
 POWER SUPPLY BOARD SCHEMATIC

PART NO. 520-5047-03

DESIGNED BY: CES, INC.

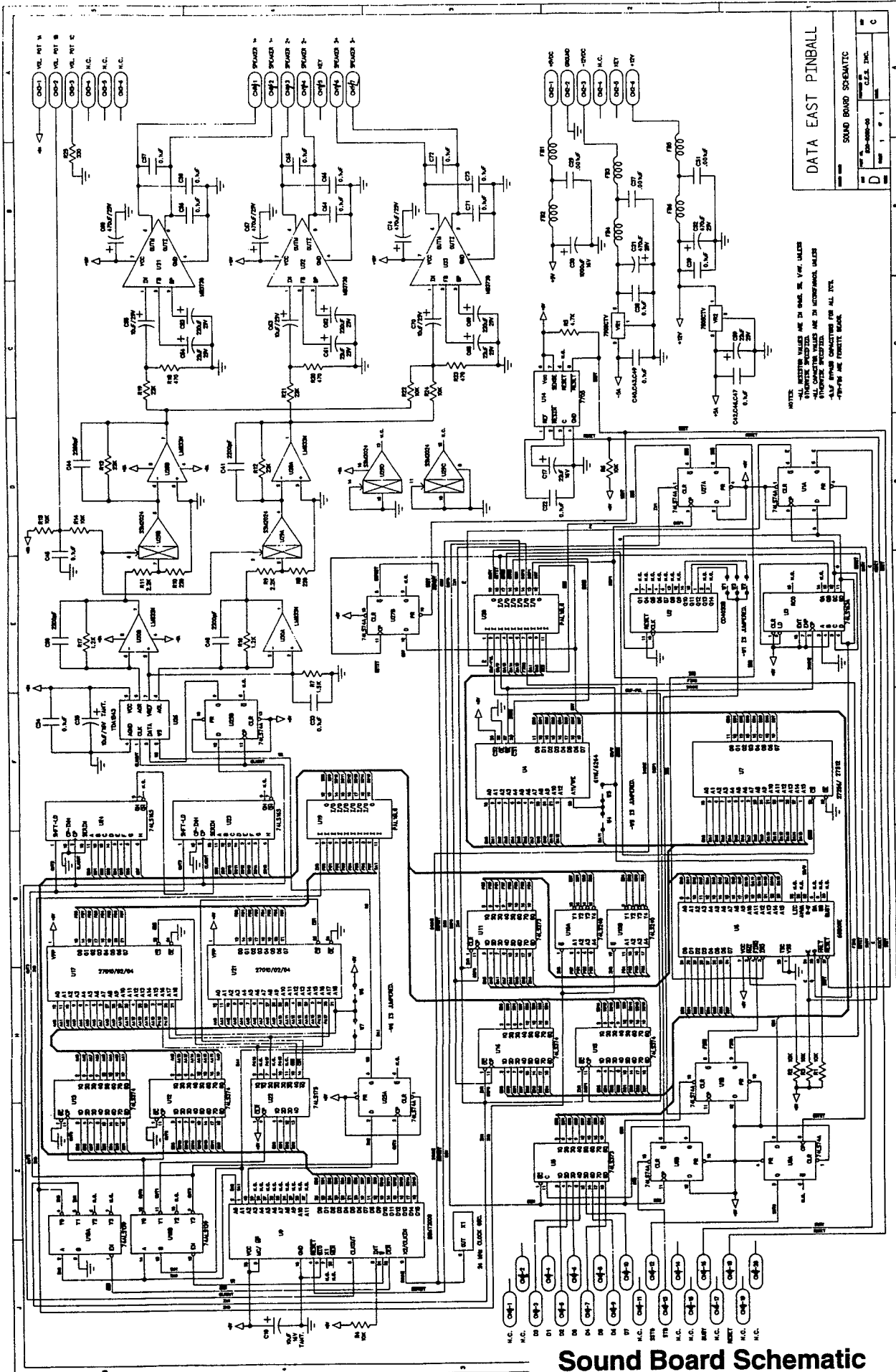
REV B





DATA EAST
 520-5050-00 REV.-C

Sound Board
 Component Layout

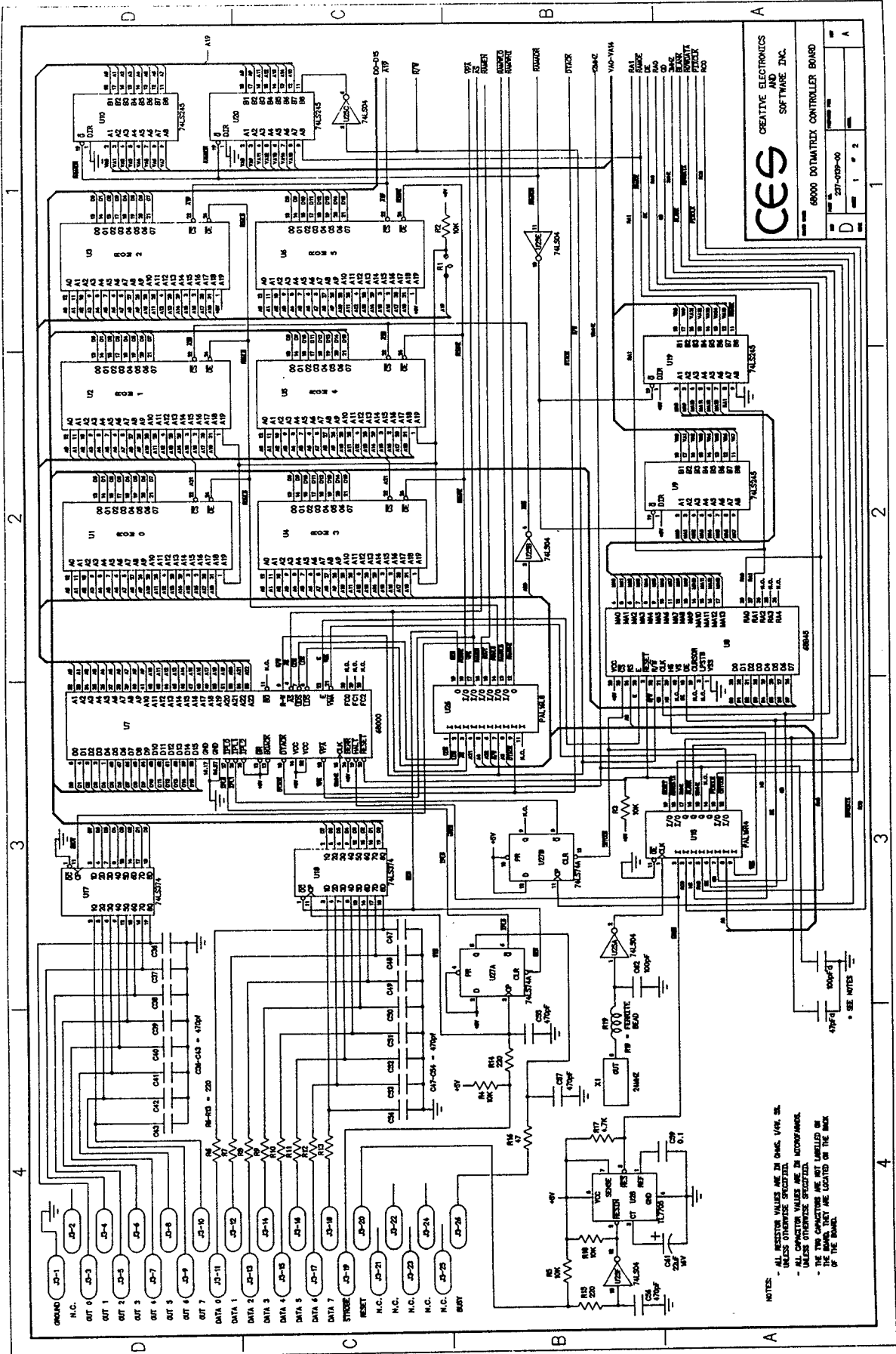


DATA EAST PINBALL
 SOUND BOARD SCHEMATIC
 REV. 1 1 1
 C

NOTE: ALL DIMENSIONS ARE IN INCHES UNLESS OTHERWISE SPECIFIED.
 ALL COMPONENT VALUES ARE IN MICROFARADS UNLESS OTHERWISE SPECIFIED.
 -1/4" PIN ARE THROUGH HOLES.

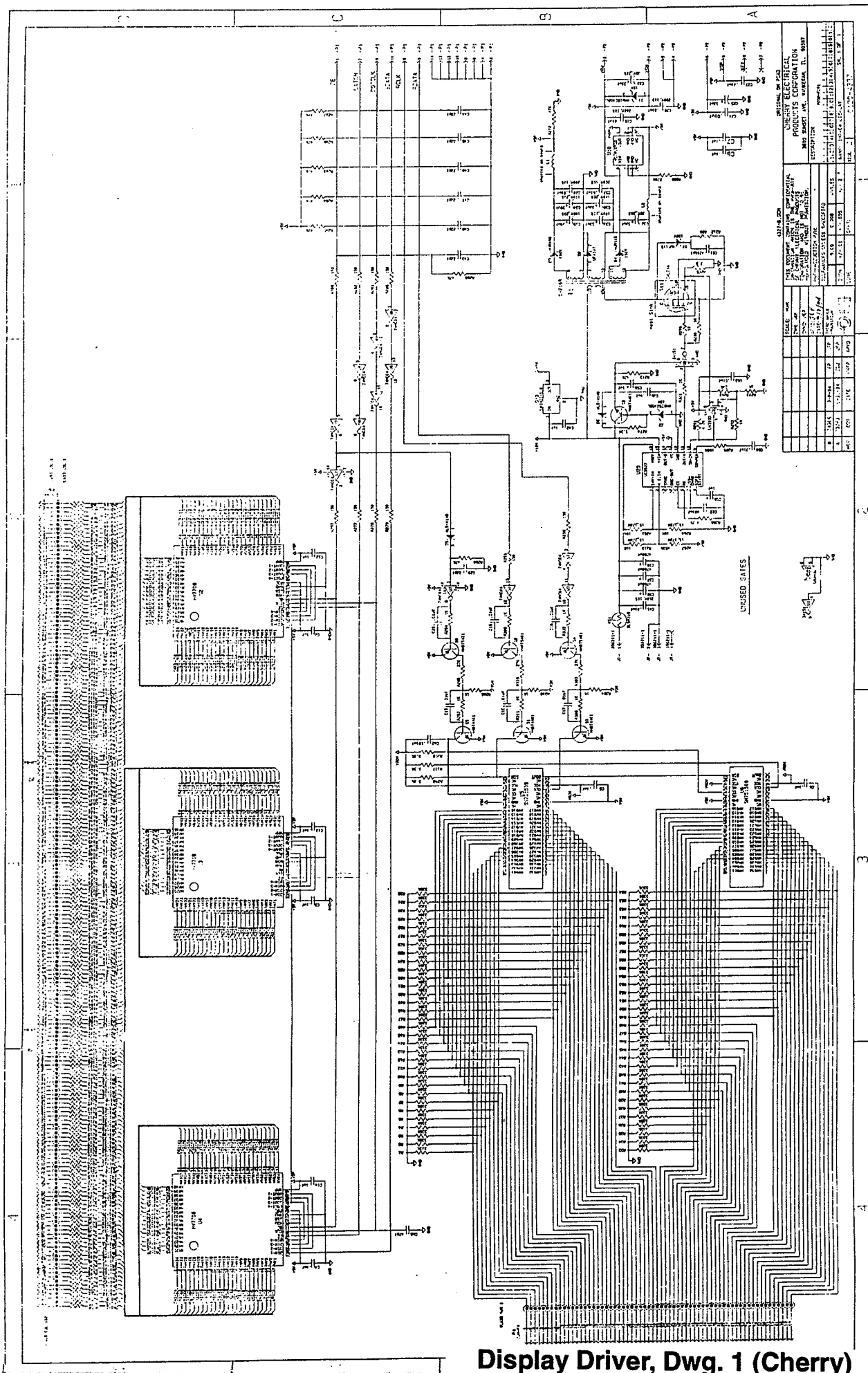
Sound Board Schematic
 (520-5050-03)

Display Controller Board Schematic (Page 1 of 2)



NOTES:
 - ALL RESISTOR VALUES ARE IN OHMS UNLESS SPECIFIED OTHERWISE.
 - ALL CAPACITOR VALUES ARE IN MICROFARADS UNLESS OTHERWISE SPECIFIED.
 - THE TWO CAPACITORS ARE NOT LABELLED ON THIS SCHEMATIC BUT ARE LOCATED ON THE BACK OF THE BOARD.
 * SEE NOTES

Display Controller Board Schematic (Page 1 of 2)

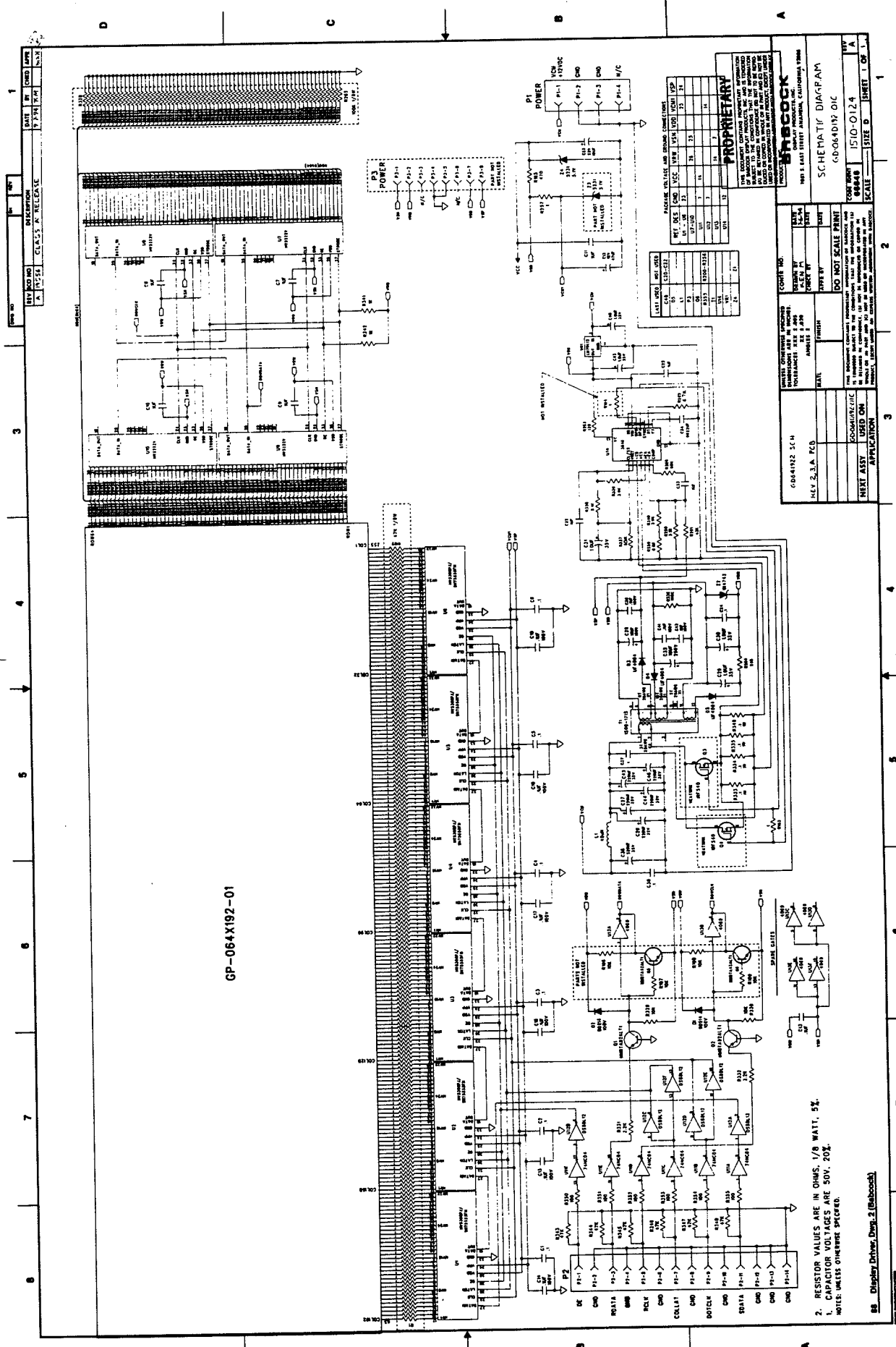


DATE: 1-15-64
 DESIGNED BY: J. J. COOPER
 CHECKED BY: J. J. COOPER
 DRAWN BY: J. J. COOPER
 TITLE: DISPLAY DRIVER

NO.	QTY.	DESCRIPTION	REF. DES.
1	1	74181	U1
2	1	74182	U2
3	1	74183	U3
4	1	74184	U4
5	1	74185	U5
6	1	74186	U6
7	1	74187	U7
8	1	74188	U8
9	1	74189	U9
10	1	74190	U10
11	1	74191	U11
12	1	74192	U12
13	1	74193	U13
14	1	74194	U14
15	1	74195	U15
16	1	74196	U16
17	1	74197	U17
18	1	74198	U18
19	1	74199	U19
20	1	74200	U20
21	1	74201	U21
22	1	74202	U22
23	1	74203	U23
24	1	74204	U24
25	1	74205	U25
26	1	74206	U26
27	1	74207	U27
28	1	74208	U28
29	1	74209	U29
30	1	74210	U30
31	1	74211	U31
32	1	74212	U32
33	1	74213	U33
34	1	74214	U34
35	1	74215	U35
36	1	74216	U36
37	1	74217	U37
38	1	74218	U38
39	1	74219	U39
40	1	74220	U40
41	1	74221	U41
42	1	74222	U42
43	1	74223	U43
44	1	74224	U44
45	1	74225	U45
46	1	74226	U46
47	1	74227	U47
48	1	74228	U48
49	1	74229	U49
50	1	74230	U50
51	1	74231	U51
52	1	74232	U52
53	1	74233	U53
54	1	74234	U54
55	1	74235	U55
56	1	74236	U56
57	1	74237	U57
58	1	74238	U58
59	1	74239	U59
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63	1	74243	U63
64	1	74244	U64
65	1	74245	U65
66	1	74246	U66
67	1	74247	U67
68	1	74248	U68
69	1	74249	U69
70	1	74250	U70
71	1	74251	U71
72	1	74252	U72
73	1	74253	U73
74	1	74254	U74
75	1	74255	U75
76	1	74256	U76
77	1	74257	U77
78	1	74258	U78
79	1	74259	U79
80	1	74260	U80
81	1	74261	U81
82	1	74262	U82
83	1	74263	U83
84	1	74264	U84
85	1	74265	U85
86	1	74266	U86
87	1	74267	U87
88	1	74268	U88
89	1	74269	U89
90	1	74270	U90
91	1	74271	U91
92	1	74272	U92
93	1	74273	U93
94	1	74274	U94
95	1	74275	U95
96	1	74276	U96
97	1	74277	U97
98	1	74278	U98
99	1	74279	U99
100	1	74280	U100

UNUSED GATES

Display Driver, Dwg. 1 (Cherry)

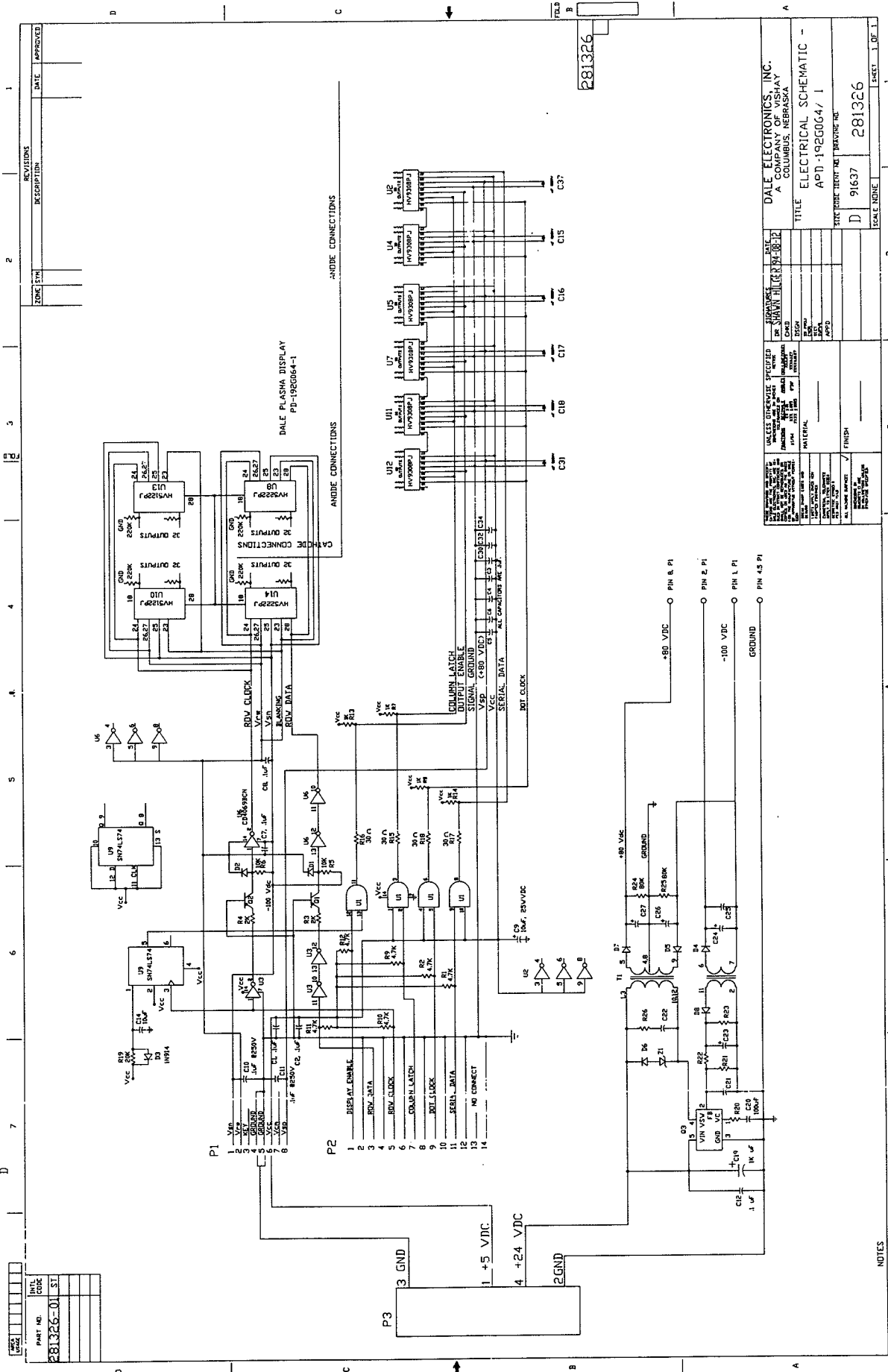


GP-064X192-01

REV	NO	DATE	BY	USED	DATE
1	1	7/24/64	WJS		
INFORMATION					
CLASS & RELEASE					
FORM NO. 1					
KEY 2, 3, 4 PCB					
DO NOT SCALE PRINT					
SCHEMATIC					
GP-064X192 OIC					
FORM NO. 1510-0124					
88449					
SCALE					
SHEET 1 OF 1					

2. RESISTOR VALUES ARE IN OHMS, 1/8 WATT, 5%
 1. CAPACITOR VALUES ARE 50V, 20%
 NOTE: UNLESS OTHERWISE SPECIFIED.

88 Display Driver, Dwg. 2 (Babcock)



REV	DATE	DESCRIPTION	APPROVED
1			
2			
3			
4			
5			
6			
7			

281326-01	ST
-----------	----

DALE ELECTRONICS, INC. A COMPANY OF WISHAY COLUMBUS, NEBRASKA	DATE 08-24-82
TITLE ELECTRICAL SCHEMATIC - APD1-192C064/ 1	DESIGNED BY D. W. WISHAY
DATE PLOTTED 08-24-82	CHECKED BY D. W. WISHAY
SCALE 1:1	APPROVED BY D. W. WISHAY
SCALE NUMBER 281326	SHEET 1 OF 1

New Solid State Flipper Board

We have redesigned our Solid State Flipper Board (S.S.F.B.) so that a misadjustment or failure of the End-of-Stroke (E.O.S.) Switch will not affect the operation of the flippers. The flippers will still work! The E.O.S. switch is strictly an added feature, not a functional part of the circuit (see E.O.S. Theory of Operation).

Theory of Operation for the Solid State Flippers

The Solid State Flipper Board is a Multiple Flipper Solenoid Driver Circuit. Each solenoid driver circuit contains a One Shot Timer, a 50V Driver, and an 8V Driver.

Looking at one circuit, Schmidt NAND gates U1A, U1b, and U1D make up the One Shot Timer. The timer length is controlled by R10, R33 and C2. The output of the timer is gated at U1C with the buffered switch input from Q6. The output of U1C controls the 50V driver circuit consisting of Q4, Q1, Q2, Q3, and D1. As long as the flipper button is activated, Q6 will keep the 8V driver circuit, SR1, on.

The 50 volts provides the actuation power to the flipper solenoid while the 8 volts provides the holding power.

E.O.S. Switch Theory of Operation

The End of Stroke (E.O.S.) Switch used in our flipper circuit is a Gold Peened Contact, Blade Switch Assembly, mounted on the flipper assembly.

Electrically, it is connected in series with the Cabinet Flipper Switch and the Flipper E.O.S. input on the Solid State Flipper Board (S.S.F.B.) connector CN1 which enables the 50 Volt DC Drive Circuit.

Referring to the Flipper Wiring Diagram, one side of the Flipper Cabinet Switch is connected to ground (BLK-Wire), the other side (BLU-VIO Wire) is connected to the flipper switch input on the S.S.F.B. connector CN1 which enables your 9 Volt DC holding voltage and is connected in series to the E.O.S. switch which is a normally closed switch.

The function of the E.O.S. switch is to prevent the flipper bat from being knocked back by a high velocity shot on the playfield. If while holding the flipper in the up position, the bat is moved back 1/16" or more, the E.O.S. switch will close giving the coil another 50 Volt pulse.

E.O.S. Switch Adjustment

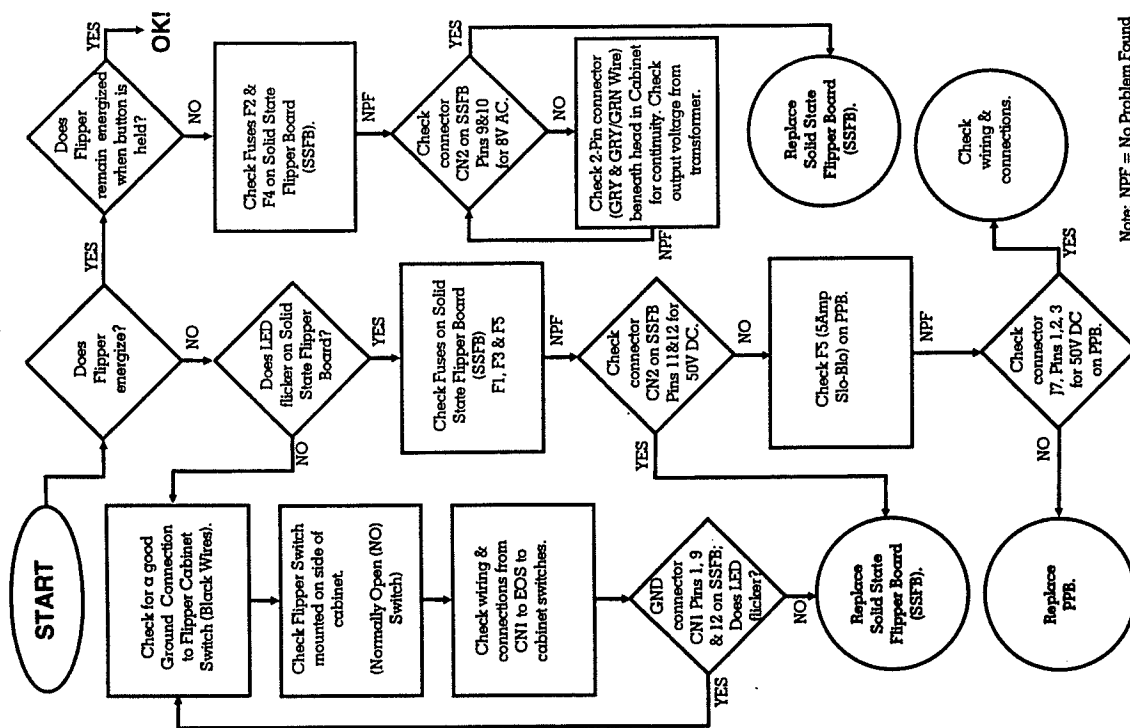
The switch contacts should be adjusted so that when the solenoid is energized, the contacts stay closed for almost the full travel of the plunger. The contacts should open 1/16" before the plunger bottoms out or reaches maximum travel.

Troubleshooting Tips

The only indication of a problem you will have is the player complaining that when the flipper bat is being held in the up position, a high velocity shot from one of the playfield solenoids causes the ball to hit the flipper bat and physically knock it back. This will not occur if the E.O.S. is working. Check switch for alignment and continuity, replace if necessary.

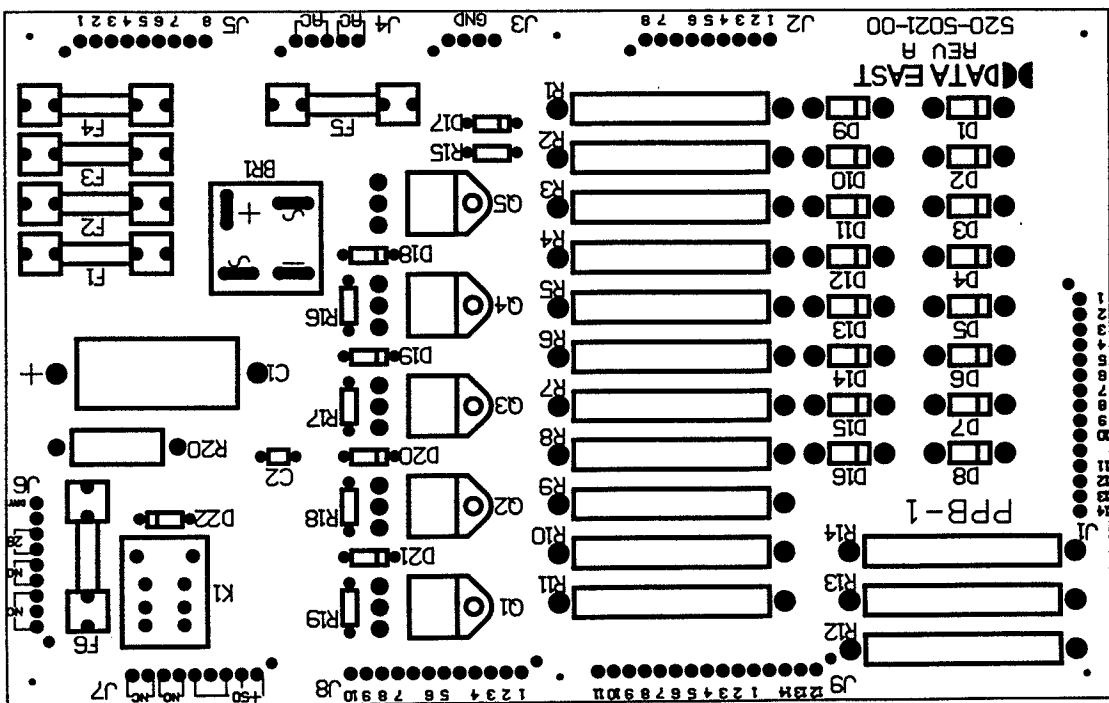
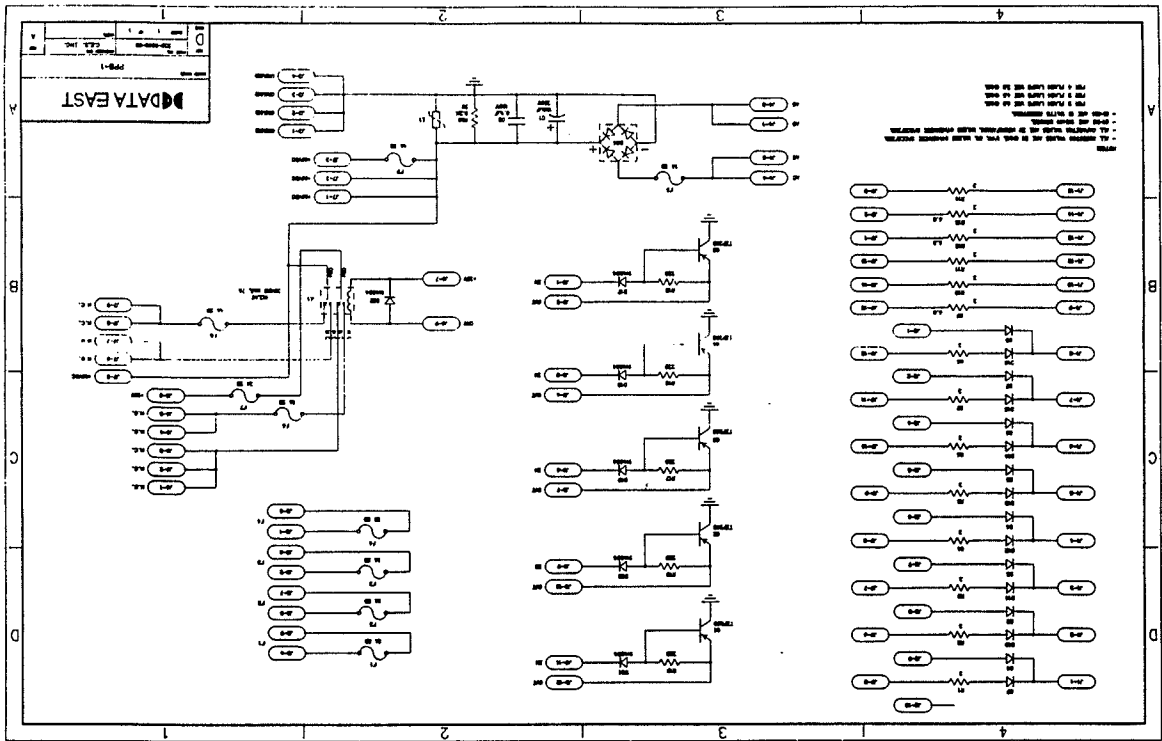
Solid State 3-Flipper Theory of Operation & Circuit Troubleshooting Flowchart

Solid State Flipper Circuit Troubleshooting Flowchart



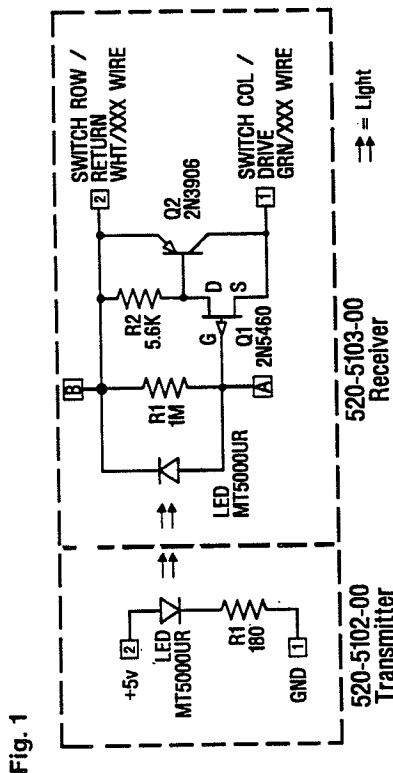
Note: NPF = No Problem Found

Solid State 3-Flipper Theory of Operation & Circuit Troubleshooting Flowchart



Theory of Operation

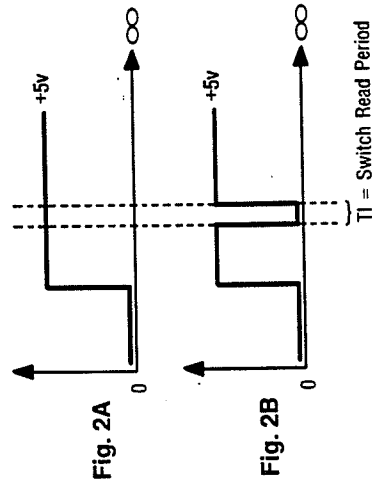
As light from the Transmitter falls on the Receiver LED, it generates a Positive Bias Voltage (0.7v to 1.5v) which is applied to the gate of Q1, turning Q1 off. When Q1 is held off, no current flows through Q2's Base, the transistor is off acting as an OPEN SWITCH. When the light is interrupted (BLOCKED) R1 bleeds the gate voltage off of Q1 allowing it to conduct, switching Q2 on, which acts as a CLOSED SWITCH.



Short Hop OPTO Schematic
& Theory of Operation

Troubleshooting Continued

2. Oscilloscope Test:



OPEN OPTO (Light Falling on LED) = SWITCH OPEN. Place Scope lead at Pin-2 of OPTO Bd. with Scope Grounded. (See Fig. 1). The Scope should display a STEADY +5v as shown in Fig. 2A, Wave Form Diagram.

CLOSED OPTO (Light Blocked) = SWITCH CLOSED. Place Scope lead at Pin-2 of OPTO Bd. with Scope Grounded. (See Fig. 1). The Scope should display a PULSE STREAM indicating Q2 has switched on as shown in Fig. 2B, Wave Form Diagram. This is your Switch Drive Pulse.

*OPTO Receiver Board.

3. Bench Test (See Fig. 3 Below):

Disconnect the OPTO Transmitter / Receiver Board from the circuit. Connect one side of a 560Ω resistor to Pin-2 of the OPTO Receiver Bd. and the other side of the resistor to a 5v DC source. Connect Pin-1 to Ground. Connect a +5v DC source to Pin-2 of the Transmitter and GND to Pin-1. Align with the Receiver OPTO approximately 3" distance. Using your Volt-Meter or an Oscilloscope, monitor Pin-2 while BLOCKING and UNBLOCKING the BEAM from the Transmitter. The output will be approximately +5v DC when the BEAM is not BLOCKED and approximately 0 volts when the BEAM is BLOCKED.

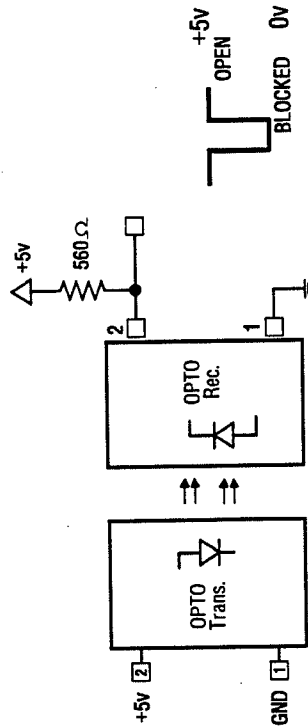


Fig. 3

Troubleshooting
(The following tests indicate normal operating conditions)

1. Volt Meter Test:

- A. **OPEN OPTO (Light Falling on LED) = SWITCH OPEN.** Place meter leads across points A and B (Refer to Schematic Drawing Fig. 1 above). It should read approximately 0.8 - 1.2v DC.
- B. **CLOSED OPTO (Light Blocked) = SWITCH CLOSED.** Place meter leads across points A and B (Refer to Schematic Drawing Fig. 1 above). It should read approximately 0.0 - 0.1v DC.

Short Hop OPTO Schematic
& Theory of Operation

Short Hop OPTO Schematic
& Theory of Operation

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