

**DE DATA
EAST**

WF

**ROYAL
RUMBLE**

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CPU JUMPER TABLE

Game	CPU* Version	ROM Position	Jumpers		Game	CPU* Version	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	3	5C	J5	J4
05. Playboy	2	5B, 5C	J4	J5	19. Jurassic Park	3	5C	J5	J4
06. ABC Mon. 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					
11. Checkpoint	3	5B, 5C	J4	J5					
12. Teen. Mnt. Ninja Trtls.	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 14-23, 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.

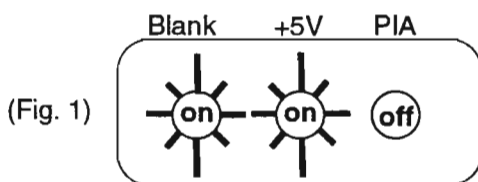
Board Compatibility (Reflexive & Non-Reflexive) of CPU Boards

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:



(Fig. 1)

Normal Operation

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)... Bumpers, Slingshots, etc.
F6	5A Slo-Blo Flash Lamps (32vDC) Right	F6	5A Slo-Blo Solenoid Buss (32vDC)
F7	3A Slo-Blo Flipper Power & 32v coils Left	F7	0.5A Slo-Blo Display Reg. Input (90vAC)
F8	4A Slo-Blo 50v coils		
F9	5A Slo-Blo 50v coils		

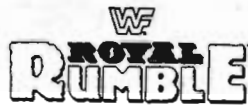


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GAME SPECIFICATIONS

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), U36 (Voice ROM 3), and U7 (Sound ROM)

Display Controller Board: Location U12, ROM 0

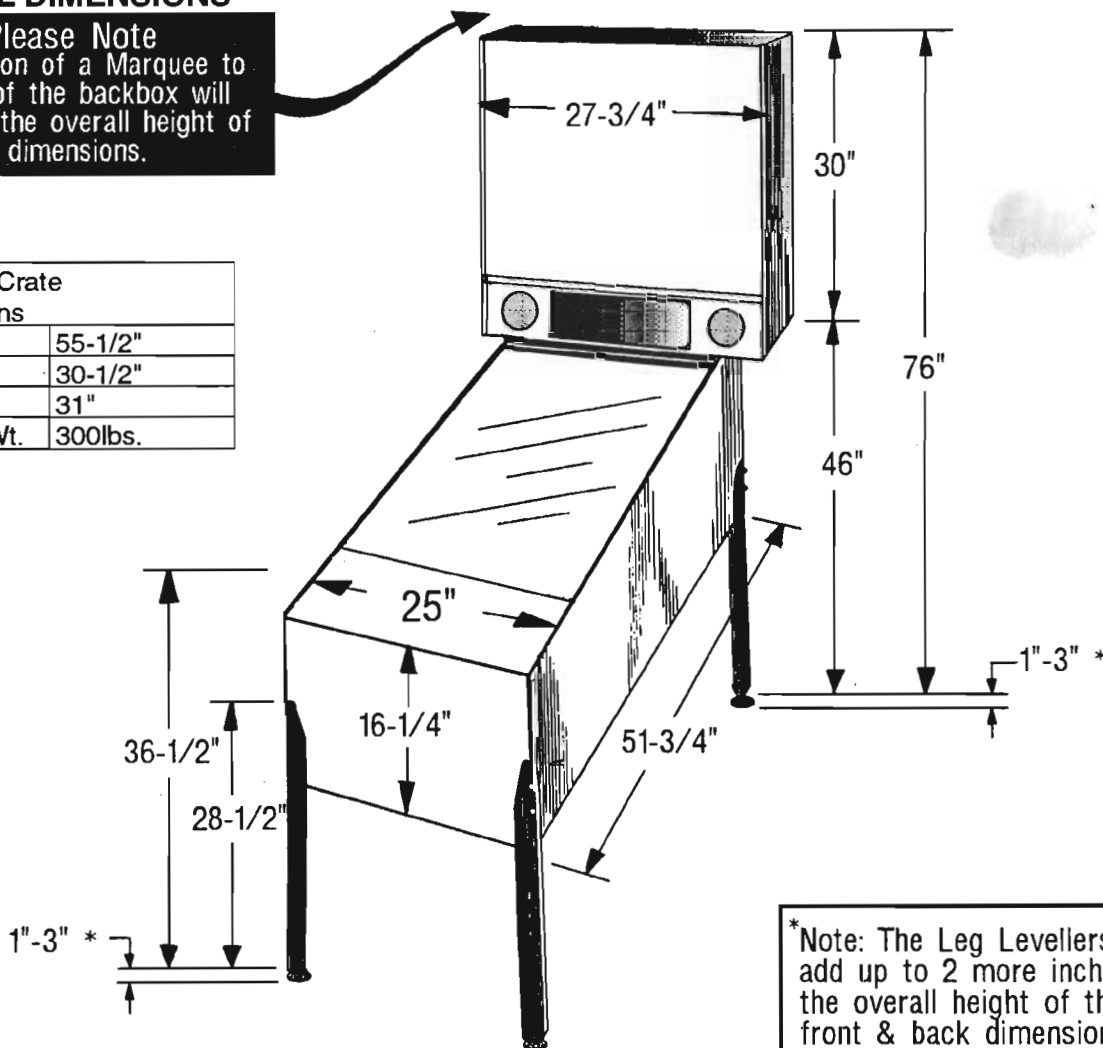
TRANSPORTATION

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

Please Note
An addition of a Marquee to the top of the backbox will increase the overall height of the back dimensions.

Shipping Crate Dimensions	
Height	55-1/2"
Width	30-1/2"
Length	31"
Approx. Wt.	300lbs.



*Note: The Leg Levellers can add up to 2 more inches to the overall height of the front & back dimensions.

Game Assembly Procedures

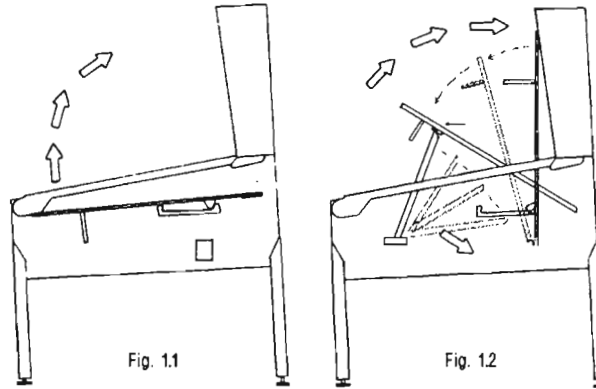
(Refer to the Illustrations on pages 3 & 4)

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.

EASY ACCESS SERVICE SYSTEM

PREVENTIVE MAINTENANCE

Lubricate slide rails with light oil periodically to assure smooth operation.

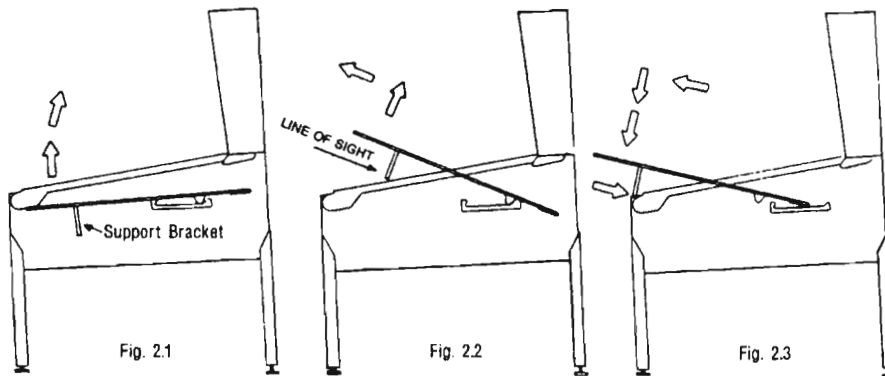


This position is useful to service:

Transformer, Cabinet Bottom Components, Playfield Bottom Components, etc.

SERVICE POSTION 1

Lift the playfield **using the left and right ball guides** upward and toward the backbox (Fig. 1.1) until the playfield can be supported with one hand. With your free hand, lift up support bar, while simultaneously lowering the playfield until the playfield and the support bar meet. Position it into the slotted bracket under the playfield. (Fig. 1.2) This bar will secure the playfield for servicing in an upward position. (Fig. 1.2). **Reverse procedure when service is complete.**

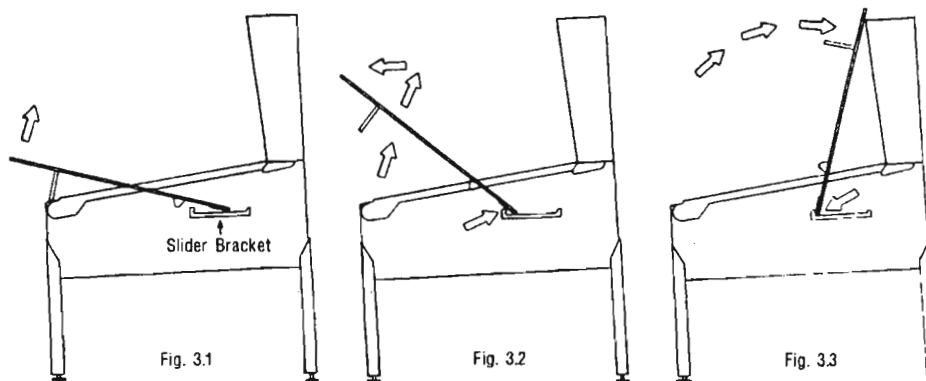


This position is useful to service:

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

SERVICE POSTION 2

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.**



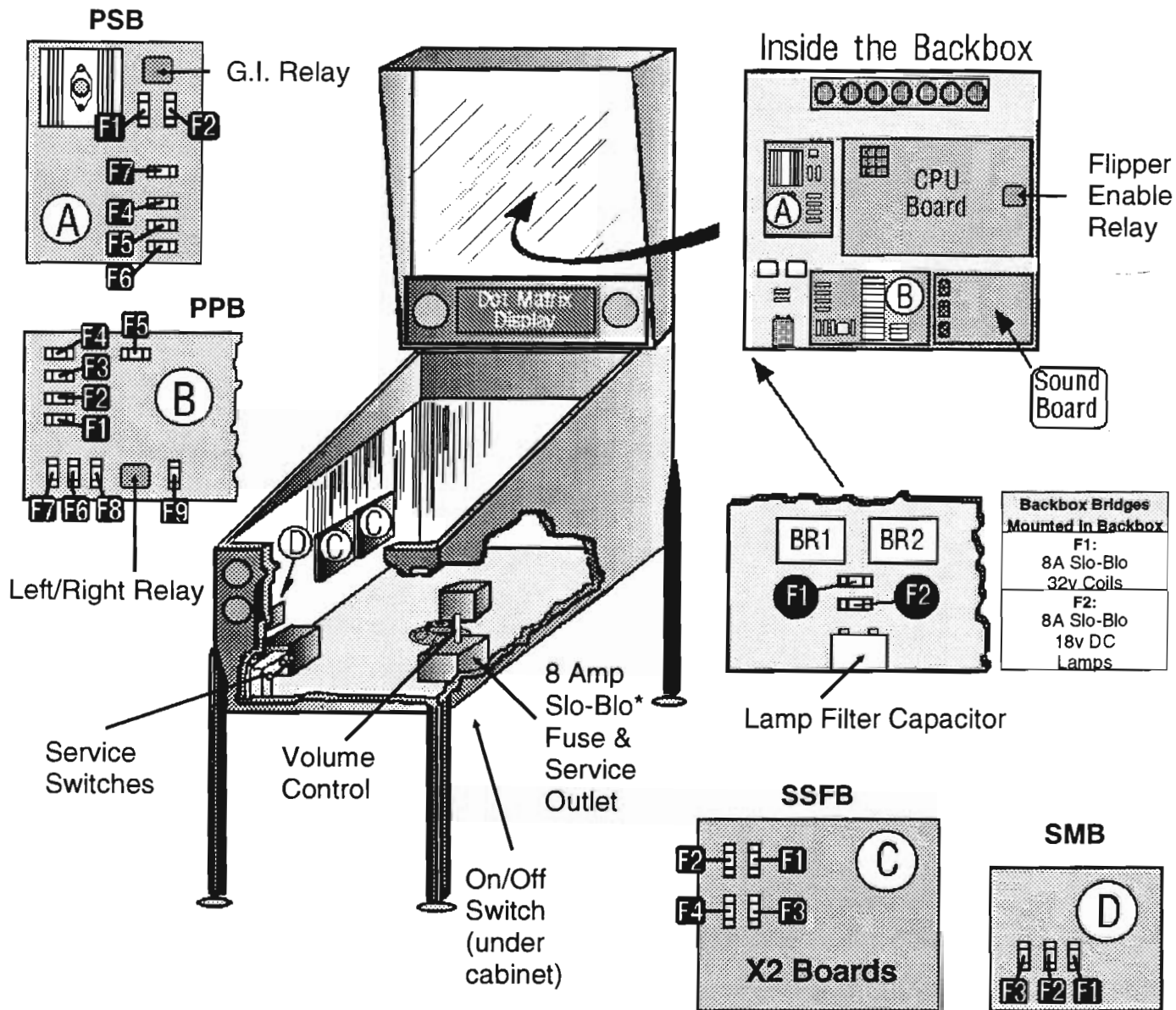
This position is useful to service:

All Playfield Bottom Components, Cabinet Components, etc.

SERVICE POSTION 3

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



Backbox Part Numbers on Page 38

A: In the Backbox	B: In the Backbox	C: In the Cabinet	D: In the Cabinet
Power Supply Board PSB	Playfield Power Board PPB	Solid State 2-Flipper Bd. SSFB (X2 Boards)	Shaker Motor Board SMB
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 RT Flipper	F1 2.5 Amp Slo-Blo
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 2.5 Amp Slo-Blo
F3 Not Used	F3 G.I. 5A Slo-Blo Playfield & Coin Door	F3 3A 250v Slo-Blo 50v DC Output LT Flipper	F3 2.5 Amp Slo-Blo
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	
F5 4A Slo-Blo Solenoid (32vDC) Bumpers, Sling- shots, etc.	F5 50v 5A Flippers /All 50v Coils		
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		
			* Cabinet Fuses
			Main Fuse Line: 8Amp 250v Slo-Blo
			International: 2X 4Amp 250v Slo-Blo

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 in the coin door ends the current game(s).

At the end of each ball, earned bonuses are collected. At the end of the last ball for the last player and after bonuses are collected, the EB Buyin Feature* countdowns awaiting for player to enable. If countdown reaches zero 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. 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

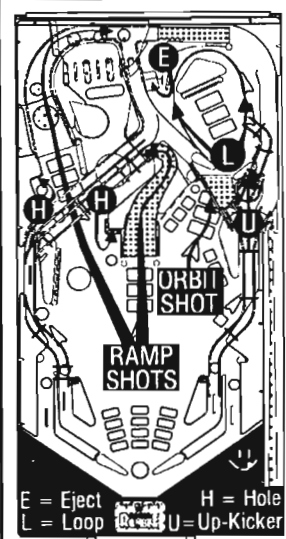
An option to add an extra ball after game is finished, prior to completion of "countdown." The same player may choose to continue the game at the same score and features active by pressing the Extra Ball Button. The number of extra balls which can be added to a game can be adjusted with Adj. 38.

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 Adjustment 02.



WF ROYAL RUMBLE DE

Power Select Use the **TAG Button** to select Special Power.

Modes Shoot Middle Ramp to light "Start Mode" Holes. Shoot the lit Hole(s) to start the mode. Collect all 9 modes to begin the *Rumble*. Shooting Ramps or Orbit will change blinking mode.

Multi-Ball Collect all 9 wrestlers by shooting ramps & orbits. Shoot upper playfield Eject, right Up-Kicker, or upper playfield Loop, to start Multi-ball.

Jackpots During Multi-Ball, collect lit *Royal Rumble Jackpot* in front of Ramps & Orbits. Collect all 9 wrestlers during Multi-ball to lite the *Super Jackpot* at the upper playfield.

Hint Hit the **TAG Button** for extra bonus after completing all T-A-G Stand-Up Targets.

E = Eject
L = Loop

H = Hole
U = Up-Kicker

TAG

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INSTRUCTION CARD
GAME RULES TO
FOLLOW

This card may be
photo-copied as a
temporary replacement.

WF ROYAL RUMBLE Rules

PLEASE NOTE

Rules and point awards are subject to change without notice.

MULTI-BALL



Multi-Ball Ready

Collect nine wrestlers to lite Multi-Ball Ready. Shooting Ramps and Right Orbit collects wrestler when blinking. Shooting the Eject, VUK, or Loop will start Multi-Ball. The first Multi-Ball may be started by shooting the Left Ramp.



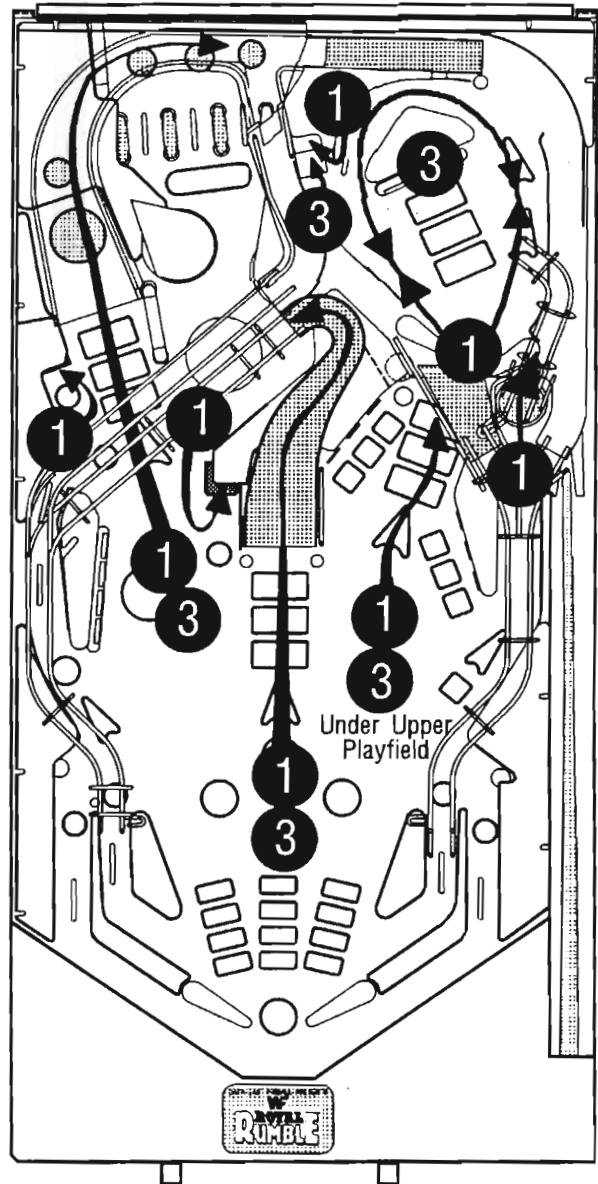
Multi-Ball Play

Royal Rumble play begins with 3-Balls. If a player can play Multi-Ball successfully for 15 seconds (without holding the ball on the flipper), another ball will enter the playfield. This will continue up to 6-Balls.



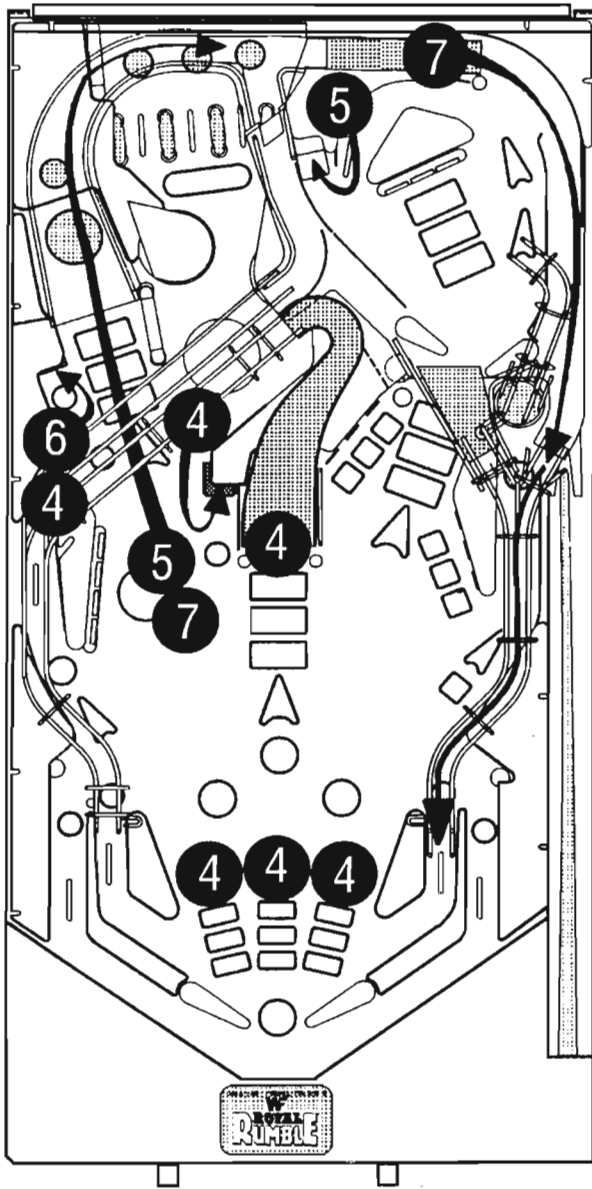
Royal Rumble Jackpot

During Multi-Ball, collect all nine wrestlers, then shoot the upper playfield Drops then Eject for Super Jackpot. If no Jackpot is collected, the Multi-Ball may be restarted at the Eject, VUK, or Loop (or, the Left Ramp on the 1st Multi-Ball).



WF ROYAL RUMBLE

Rules



Modes

4F **Light Mode**
Start blinking mode at Left or Center hole when lit. To relight Mode, shoot Center Ramp — 1st shot lites Start Mode at Left, 2nd shot lites Center Mode Start. (i.e. Shooting the Left Ramp enables a value in the left column blinking.) Shooting either of the unlit Ramps/Orbit will move the blinking mode in that direction, (i.e. If a center mode is blinking: Shooting the center ramp will move the blinking value up to the next unlit value.) The mode columns do not have to be filled or lit in any order. The top three Rumble's are to be completed last. Modes may also be started via Macho Madness (see Rule #17).

5F **Pandemonium**
Two ball play with add a ball feature. Shooting upper playfield, lite 'Add A Wrestler' at eject. Shoot to add a ball to play. Target values increase with the number of balls on the playfield.

6F **Lite Extra Ball**
Shoot the Left Hole to collect.

7F **Banzai**
Ramp looping round. Left Ramp returns ball to Right Flipper. Four shots to finish.

WF ROYAL RUMBLE

Rules

8 Super Pops Sleeper Hold

Each POP (Bumper) advances strength of Sleeper Hold. 15 POPS to put opponent to sleep and collect award. Going into the POPS via the Left Lane behind drops or hitting the Captive Ball into the right POP count as 2 POPS.

9 Championship belt round

Shoot the Left Ramp or the VUK to get to the Upper Playfield. Each Drop Target Bank completion awards a Championship Belt: Intercontinental, Tag Team and Heavyweight. After completing first bank, lite Eject to collect additional bonus. Shoot the Drops to collect the next Belt. Loops and Drop Targets hit will increase value of bonus in the Eject. Repeat until third Belt is collected.

10 Search for Doink

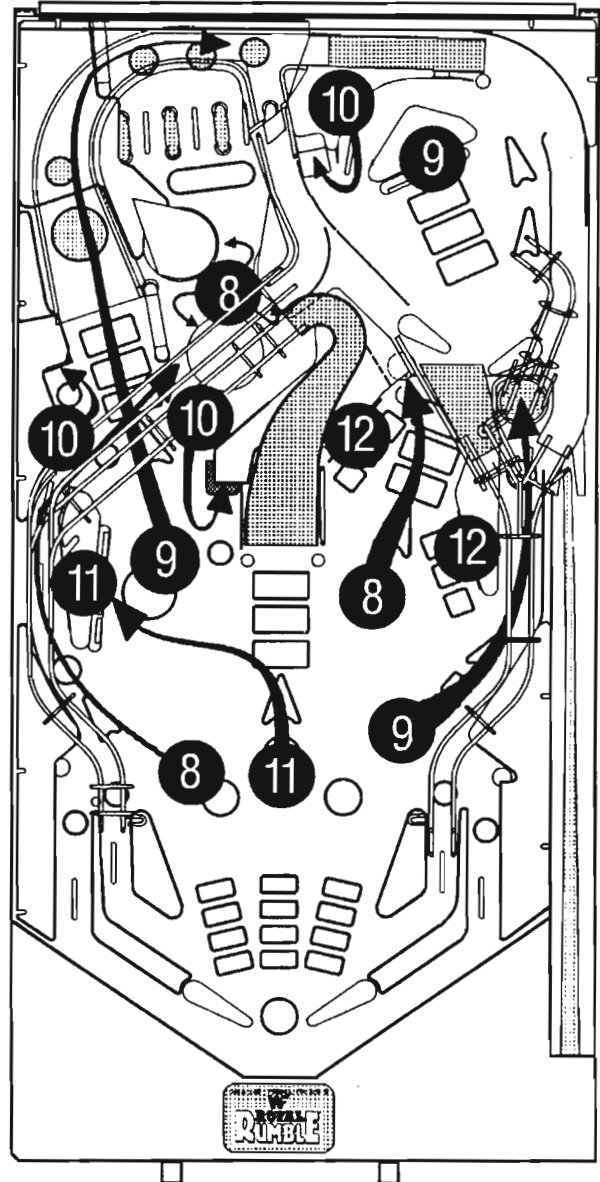
Find Doink. Shoot holes, or the Upper Eject to find Doink for award.

11 Raise the Undertaker

Drop Target Round. Drop Targets spell D-E-A-D. Each target hit increases the value of award. Hit until timer expires.

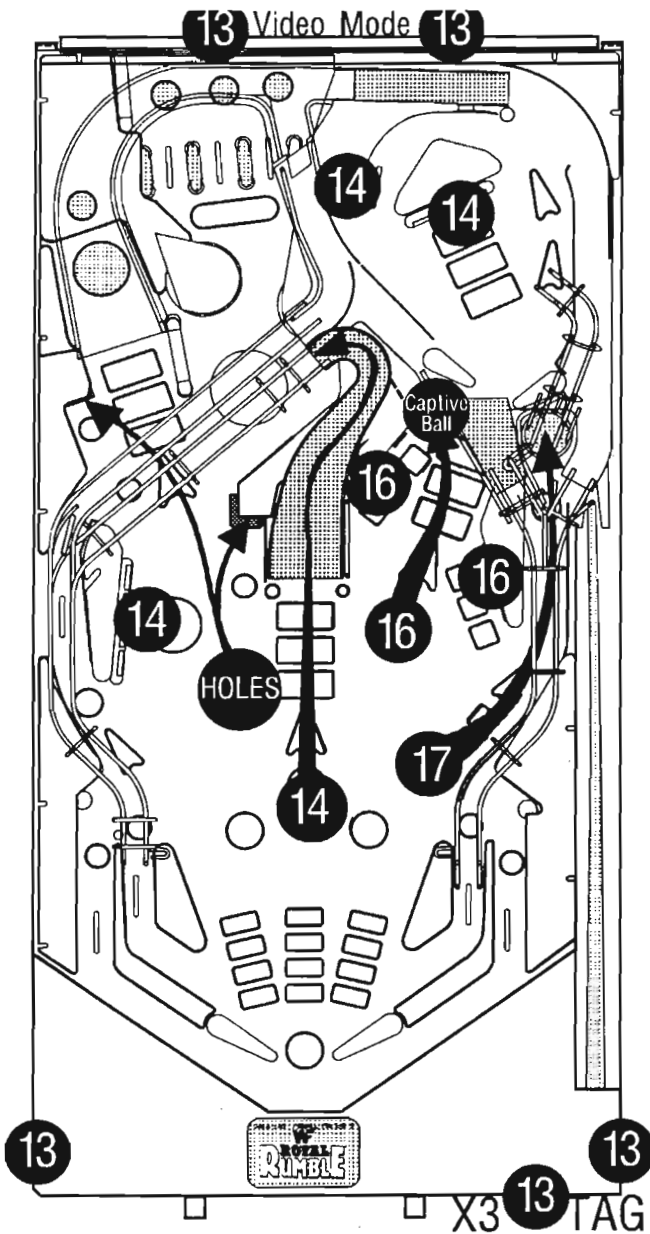
12 Tag Team Millions

Both 3-banks of Stand-Up Targets are lit. Each hit awards value, a bank shot hitting a target of each bank scores big value. Upon completing a bank, hit the TAG Button for bonus.



WF ROYAL RUMBLE

Rules



13 **No Holds Brawl**
Video Mode. Hit flippers to increase strength over opponent. After knocking opponent to the mat, hit the TAG Button three (3) times to pin him.

14 **Rumble (3)**
After the 9 Grid Features are completed, the Rumble is available at the Mode Start holes. Once started, shoot the Ramps and Orbit Shot to start 6-Ball Play. Hit the Pop Bumpers & Upper Drop Targets to eliminate Wrestlers, then shoot Jackpots.

Special Rules

15 **Tag Team Play**
In a 4—Player game, players can team up. *Player—1 + Player—3* (Team 1: Smoking Guns) vs. *Player—2 + Player—4* (Team 2: The Steiner Bros.). The display will show the combined scores, and in between balls will show individual scores and in instant info. The replay value is doubled.

16 **Captive Ball**
Lit when both TAG Banks are completed. Hitting the Captive Ball will award different values.

17 **Macho Madness**
Spell M-A-C-H-O-M-A-N from Ramps, VUK, or Eject if not lit. Shoot the Right VUK to collect double bonus, then shoot Upper Drop Targets. Spelling M-A-C-H-O starts Grid Feature.

WF ROYAL RUMBLE

Rules

18

Skill Shot

Use TAG Button to select Special Power. The skill shot offers the player a choice of one of three Special Powers. Possible Powers include:

- 2X Banzai
- 3-Ball Pandemonium
- 3X Bonus Multiplier
- Pop Bonus
- Longer Timers
- Belt (Round) Bonus
- Long Freeze
- Video (Mode) Bonus
- TAG Bonus
- M-Ball Ready
- Spot 3 Wrestlers
- Lite X-Ball
- 10M points
- 20M points
- Start Mode

19

Combo Shot

Left Ramp, Middle Ramp, Right Orbit awards Quick Combo.

20

Chair Bashing

Shooting the Loop behind the lower Drop Targets (DEAD) when not lit for Rule #22 will make a wrestler run onto the display and begin to bash someone with his chair. Hitting the TAG Button will act in retaliation and award bonus for completing.

21

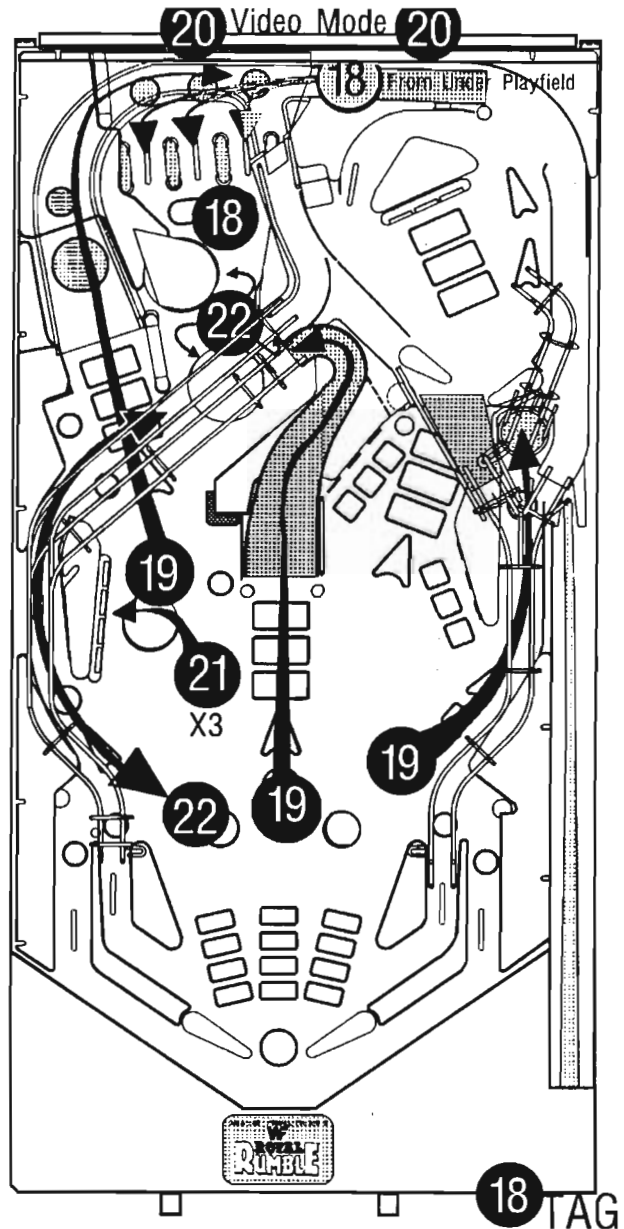
Rest in Peace Jackpot

Completing the Drop Targets 3 times in a player game will award a "Rest in Peace" Jackpot. The Jackpot value increases with every Drop Target that is hit. The value is held over ball-to-ball, and player-to-player.

22

In the Ring

Any time the ball rolls from top to bottom via the lane behind the drop targets, the Value (increases with pops hits) is awarded via the same shot, but bottom to top, if made before timer expires.



23

Secrets

Various Easter Egg Bonuses are awarded. Search for them!

AUDIT FUNCTIONS

GENERAL

There are 75 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 63 less-used audits (13 through 75), 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 11, Audits Reset**. Game adjustments (1 to 12 and 13 to 75) begin after the last audit function (12 or 75). 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 Balls Total (Audit 13)
Au. 4	Average Game Time	The Average Game Time expressed in minutes and seconds.
Au. 5, 6, 7, 8	Coins (Left, Right, Center, & 4th Chute)	These four audit totals are provided to show the amount of coins registered for the LT, RT, CT, & 4th Chute, respectively.
Au. 9	Total Coins	The total number of coins dropped through all 4 coin chutes.
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.

WWF Royal Rumble Game Audit Table

Item/Description		
1	Total Paid Credits	
2	Free Game Percentage	
3	Average Ball Time	
4	Average Game Time	
5	Coins Left	
6	Coins Right	
7	Coins Center	
8	Coins 4th Chute	
9	Total Coins	
10	Total Earnings	
11	Meter Clicks	
12	Expand Audits...(On/Off)	
13	Balls Total	
14	Extra Balls Total	
15	Extra Ball Percent	
16	Replay 1 Awards	
17	Replay 2+ Awards	
18	Total Replays	
19	Replay Percent	
20	Total Specials	
21	Special Percent	
22	Total Matches	
23	High Score (HS) Wins	
24	High Score (HS) Percent	
25	Total Free Plays	
26	Total Plays	
27	000.0 - 099.9 Million	
28	100.0 - 199.9 Million	
29	200.0 - 299.9 Million	
30	300.0 - 399.9 Million	
31	400.0 - 499.9 Million	
32	Over 500 Million	
33	Average Scores	
34	Service Credits	
35	Proprietary	
36	Proprietary	
37	Proprietary	
38	Total Buyin Games	

Item/Description		
39	Extra Ball (EB) Buyins	
40	EB Buyin Replay Awards	
41	EB Buyin HS Awards	
42	Drains Left	
43	Drains Center	
44	Drains Right	
45	Slam Tilts	
46	Multiball from VUK	
47	Multiball from Eject	
48	Multiball from Loop	
49	Multiball Restart Awarded	
50	1st Multiball	
51	2nd Multiball	
52	3rd+ Multiball	
53	Left Jackpot	
54	Center Jackpot	
55	Right Jackpot	
56	Super Jackpot	
57	Rumble Feature (Rule #14)	
58	Freeze Used	
59	Skill Shot Made	
60	Grid Extra Ball Lit	
61	Captive Ball EB Lit	
62	Captive Ball EB	
63	Captive Ball Special Lit	
64	Outlane Special Lit	
65	Add-A-Ball Fed	
66	Lower Drops Completed	
67	Undertaker Jackpot Scored	
68	Hurry-Up Scored	
69	Left Ramp Shots	
70	Right Ramp Shots	
71	Middle Orbit Shots	
72	Left VUK Scored	
73	Upper Eject Shots	
74	Upper Loop Shots	
75	Upper Drops Completed	

Audits - 'Expanded' Generic Functions

Au.#	Audit Name	Audit Definition
Au. 13	Balls Total	The total of regular and extra balls.
Au. 14	Extra Balls Total	The total number of extra balls awarded.
Au. 15	Extra Balls Percentage	The Extra Balls Total (Au.14) divided by Total Plays (Au. 26).
Au. 16 & 17	Replay 1, 2+ Awards	These audits provide the total awards (credit, extra ball, or audit) for replay level 1 or 2+, respectively.
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 Percentage	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 if enabled.
Au. 23	High Score Wins	The total credits awarded for exceeding the high-score-to-date scores.
Au. 24	High Score Percent	The High Score Wins (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	000.0 - 099.9 Million	Provides the total number of games the Player's final score was between 0 and 49,999,990 points.
Au. 28	100.0 - 199.9 Million	Provides the total number of games the Player's final score was between 50,000,000 and 99,999,990 points.
Au. 29	200.0 - 299.9 Million	Provides the total number of games the Player's final score was between 100,000,000 and 199,999,990 points.
Au. 30	300.0 - 399.9 Million	Provides the total number of games the Player's final score was between 200,000,000 and 299,999,990 points.
Au. 31	400.0 - 499.9 Million	Provides the total number of games the Player's final score was between 300,000,000 and 399,999,990 points.
Au. 32	Over 500 Million	Provides the total number of games the Player's final score was over 400,000,000 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.

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. See <i>Game Diagnostics</i> on page 25 for instructions regarding entry of Service Credits.
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 Buy-In Feature.
Au. 39	Extra Ball Buyins	Provides the total number of times the Extra Ball Buyin feature was used.
Au. 40	EB Buyin Replay Awards	Provides the total number of replay awards that resulted from the use of the Extra Ball Buyin (Au. 39) feature.
Au. 41	EB Buyin HS Awards	Provides the total number of times in which use of the Extra Ball Buyin feature resulted in a high score.
Au. 42	Drains Left	Provides the number of times the ball drained out the left drain.
Au. 43	Drains Center	Provides the number of times the ball drained out the center drain.
Au. 44	Drains Right	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.

Audits - 'Expanded' Game Specific Functions

Au.#	Audit Name	Audit Definition
Au. 46	Multiball from VUK	Provides the total number of times Multi-Ball started after entering the VUK.
Au. 47	Multiball from Eject	Provides the total number of times Multi-Ball started after entering the Eject.
Au. 48	Multiball from Loop	Provides the total number of Multi-Balls started from the upper playfield.
Au. 49	Multiball Restart Awarded	Provides the total number of times the Multiball Restart feature was awarded.
Au. 50	1st Multiball	Provides the total number of times the Multiball Feature was awarded the 1st time.
Au. 51	2nd Multiball	Provides the total number of times the Multiball Feature was awarded the 2nd time.
Au. 52	3rd+ Multiball	Provides the total number of times the Multiball Feature was awarded three or more times.
Au. 53	Left Jackpot	Provides the total number of times the Left Jackpot feature was scored.

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

Au.#	Audit Name	Audit Definition
Au. 54	Center Jackpot	Provides the total No. of times the Center Jackpot feature was scored.
Au. 55	Right Jackpot	Provides the total No.of times the Right Jackpot feature was scored.
Au. 56	Super Jackpot	Provides the total No. of times the Super Jackpot feature was collected.
Au. 57	Rumble Jackpot	Provides the total No. of times the Rumble feature was earned. Feature is Game Rule #14.
Au. 58	Freeze Used	Provides the total number of times the Freeze feature was used. The Freeze 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.
Au. 59	Skill Shot Made	Provides the total No. of Skill Shot awards.
Au. 60	Grid Extra Ball	Provides the total No. of times the Extra Ball was lit from the Grid.
Au. 61	Captive Extra Ball	Provides the total No. of times the Extra Ball was lit from the Captive Ball.
Au. 62	Captive Ball EB	Provides the total No. of times the EB was collected through the Captive Ball.
Au. 63	Captive Ball Special Lit	Provides the total No. of times the Special was lit from the Captive Ball.
Au. 64	Outlane Special Lit	Provides the total No. of times the Special was lit from the outlanes.
Au. 65	Add-A-Ball Fed	Provides the total No. of times that a ball was added during Pandemonium Grid Feature.
Au. 66	Lower Drops Completed	Provides the total No. of times that the lower drop target bank was completed.
Au. 67	Undertaker Jackpot Scored	Provides the total No. of times that the Undertaker Jackpot was awarded.
Au. 68	Hurry-Up Scored	Provides the total No. of times that "In the Ring" was scored.
Au. 69	Left Ramp Shots	Provides the total No. of times the Left Ramp was scored.
Au. 70	Right Ramp Shots	Provides the total No. of times the Right Ramp was scored.
Au. 71	Middle Orbit Shots	Provides the total No. of times the Middle Orbit was scored.
Au. 72	Left VUK Scored	Provides the total No. of times the left VUK was scored.
Au. 73	Upper Eject Shots	Provides the total No. of times that the Eject on the Upper Playfield was scored.
Au. 74	Upper Loop Shots	Provides the total No. of times that the Loop on the Upper Playfield was scored.
Au. 75	Upper Drops Completed	Provides the total No. of times that the Drop Target Bank on the Upper Playfield was completed.

GAME ADJUSTMENTS

GENERAL

There are 53 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' (1-6)

Adj.#	Adjustment Name	Adjustment Definition
Adj. 1	Replay - Manual: Replay - Fixed:	Adjust for percentage of awards for replay levels (1% through 50%). Proceed to Adj. 2 and 3 for starting replay levels. Lower the automatic value to 0% and the display will indicate Fixed. Proceed to Adj. 2 and 3 for fixed replay levels.
Adj. 2	Start Replay - Manual	Adjust the starting Replay 1 setting to between 50,000,000 and 9,999,000,000.
Adj. 3	Levels Replay / Level 1, 2, 3 & 4 Replay	Adjust the number of replay levels to be active (1to 4). Any additional starting replay levels are automatically set to values higher than Replay 1. Adjust Replay 1 level to between 50,000,000 and 9,999,000,000. (Same as Start Replay). If Adj. 3 is set for 2, 3, or 4, adjust Replay 2, 3, or 4 (respectively) level to between 50,000,000 & 9,999,000,000.
Adj. 4	Replay Awards	Set for replays to award: CREDIT, EXTRA BALL, NONE or SPECIAL (When score threshold is achieved, a Playfield Special is lit.)
Adj. 5	Limit Freeware	Adjust the max. # of free games that may be accumulated per game; 0-9
Adj. 6	Limit Extra Balls	Adjust the max. # of extra balls that may be accumulated per game; 1- 9 or OFF.

WF ROYAL RUMBLE

Game Adjustment Table

Adj. No.	Description	Factory Setting	Adj. No.	Description	Factory Setting
1	Replay: Manual/Fixed	10%	32	Attract Music	On
2	Start Replay	350,000,000	33	Flash Lamps	Normal
3	Replay Levels†	01	34	Coils Pulse	Normal
4	Replay Awards	Credit	35	Proprietary	No
5	Limit Freegame	03	36	Next Game Promo Message	On
6	Limit Extra Balls	03	37	Buy-In Type	Extra Ball
7	Game Rules†	Moderate	38	# of E.B. Buyin Allowed	01
8	Game Price†	USA2	39	Restart Game	No
9	Reset Coins	No	40	Extra Ball Percentage	25%
10	Reset Audits	No	41	Volume Control	100%
11	Restore High Scores	No	42	Bill Validator	No
12	Expand Adjustments	No	43	Tournament Style	None
13	Match Percentage	08%	44	Stuck Tilt Alarm	On
14	Balls Per Game	03	45	Extra Ball Lit from Memory	On
15	Tilt Warnings	01	46	External Replay Klocker Option	Off
16	Replay Boost	Yes	47	Shaker Motor	On
17	Credits Limit	30	48	Software Meter	00
18	High Scores Allowed	Yes	49	Earnings Routine	N/A
19	High Score #1 Awards	03	50	Location ID Number	0000
20	High Score #2 Awards	01	51	Game ID Number	0000
21	High Score #3 Awards	01	52	Reset Printer	N/A
22	High Score #4 Awards	00	53	Printer Interface	PRESS START TO PRINT
23	Default High Score #1	700,000,000	†Some settings result in Drop-Down Tables Review the following pages which define all of the above adjustments.		
24	Default High Score #2	600,000,000			
25	Default High Score #3	550,000,000			
26	Default High Score #4	500,000,000			
27	Default High Score #5	450,000,000			
28	Default High Score #6	400,000,000			
29	Reset High Score To Date	700			
30	Free Play	No			
31	Custom Message	On	99	Factory Restore	No

SINGLE-FUNCTION DIFFICULTY ADJUSTMENT (7)

Adj.#	Adjustment Name	Adjustment Definition
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Adj. 7 **Game Rules** 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.)

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

The following three combinations are recommended for situations where local laws restrict certain game features regarding the use of replays or the number of balls per game:

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

Adj.	Adj. Name	Setting	Adj.	Adj. Name	Setting
1	Manual Replay	Fixed	6	Limit Extra Balls	00
2	Start Replay	00	14	Match Percentage	Off
3	Replay Levels	None	20	Hi-Score 1 Awards	03
4	Game Awards	None	21	Hi-Score 2 Awards	01
5	Limit Freegame	00			

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

Adj.	Adj. Name	Setting	Adj.	Adj. Name	Setting
1	Manual Replay	07%	15	Balls Per Game	05
2	Start Replay	400,000,000	20	Hi-Score 1 Awards	03
3	Replay Levels	01	21	Hi-Score 2 Awards	01
4	Game Awards	Credit			
5	Limit Freegame	03			
6	Limit Extra Balls	03			
14	Match Percentage	04			

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	Game Awards	Extra Ball	19	Hi-Scores Allowed	No
5	Limit Freegame	00	20-23	Hi-Score 1-4	00
14	Match Percentage	Off			

GAME PRICE ADJUSTMENT (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 **Standard /Custom Pricing Table**. 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 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	Plays/Coins	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	01	12	05	02	03	00	00	00	
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 Number of "Plays" for Price Amount Shown			
	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	1/50 BF		
Canada	25¢	25¢	Can\$ 1		1/50¢	2/75¢	3/Can\$ 1	
Denmark	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	5/20 NKr		
Spain	100Pts		500Pts		1/100Pts	6/500Pts		
Sweden 1	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			

★ Indicates Factory Setting for the Country Code. ☆☆ Indicates new setting 1994.

ADDITIONAL GENERIC FEATURES (9-38)

Adj.#	Adjustment Name	Adjustment Definition
Adj. 9	Reset Coins	When enabled (set to YES) all coin/paid credit totals will be reset to zero when STEP is depressed.
Adj. 10	Reset Audits	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	Credits 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	High Scores Allowed	Set to enable or disable the four high score levels; 00 .
Adj. 19	High Scores #1 Awards	Adjust the number of credits (0 to 4) awarded for exceeding level 1 (the highest of the four levels).
Adj. 20	High Scores #2 Awards	Adjust the number of credits (0 to 3) awarded for exceeding level 2.
Adj. 21	High Scores #3 Awards	Adjust the number of credits (0 to 2) awarded for exceeding level 3.
Adj. 22	High Scores #4 Awards	Adjust the number of credits (0 to 1) awarded for exceeding level 4.
Adj. 23	Default High Score #1	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, Reset High Score To Date.
Adj. 24	Default High Score #2	Adjust the backup score level to which level 2 may be reset.

Additional Generic Features Continued (9-38)

Adj.#	Adjustment Name	Adjustment Definition
Adj. 25	Default High Score #3	Adjust the backup score level to which level 3 may be reset.
Adj. 26	Default High Score #4	Adjust the backup score level to which level 4 may be reset.
Adj. 27	Default High Score #5	Adjust the backup score level to which level 5 may be reset.
Adj. 28	Default High Score #6	Adjust the backup score level to which level 6 may be reset.
Adj. 29	Reset 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.
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 Adj. 32.
Adj. 32	Attract Music	Set to ON or OFF .
Adj. 33	Flash Lamps	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	Coils Pulse	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 Promo Message	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	Buy-in Type	Set to Extra-Ball Buyin . When set to EB Buyin , the game is set to Extra Ball Buy-in. When set to Feature Buyin , the game is set to Game Buy-in. Set to OFF to make Buy-in Type inoperative.
Adj. 38	# of E.B. Buyin Allowed	00, 01 or UNLIMITED . Allows the operator to adjust the number of Extra Ball (EB) Buyins allowed after normal game play.
Adj. 39	Restart Game	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.

GAME SPECIFIC FEATURES (39-52, 99)

Adj.#	Adjustment Name	Adjustment Definition
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	Volume Control	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 "Insert Bill Animation". When set to NO , the display, in game attract mode will show "Insert Coin Animation".
Adj. 43	Tournament Style	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 & Ex Ball percent 30%.
Adj. 44	Stuck Tilt Option	Set to ON or OFF . When set to ON , if the tilt switch is stuck closed, the game will tilt when the average ball time is received.
Adj. 45	Extra Ball Lit from Memory	Set to ON or OFF . When set to ON , the lit 'Shoot for Extra Ball' light will be retained in memory from ball to ball for the same player. When set to OFF , the lit 'Shoot for Extra Ball' light will go out at the end of each ball.
Adj. 46	External Replay Klocker Option	Set to ON or OFF . When set to ON , the operator can enable the knocker in the cabinet to drive an external device without the game giving a replay.
Adj. 47	Shaker Motor	Set to ON or OFF . Allows operation of the vibrating Shaker Motor during certain events in game play. Default set to ON .
Adj. 48	Software Meter	Provides the operator with the total number of Meter Clicks.
Adj. 49	Earnings Routine	Provides ...Programmer to verify.
Adj. 50	Location I.D. Number	0 to 9999 . Allows the operator to assign a location identification number to the audit print-out sheet.(Will not be affected by Factory Restore.)
Adj. 51	Game I.D. Number	0 to 9999 . Allows the operator to assign a game identification number to the Audit print-out sheet.(Will not be affected by Factory Restore.)
Adj. 52	No. of Copies Printed	Provides the operator with the total number of copies that were printed.
Adj. 53	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 Game Start push-button switch on the front of the cabinet. 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.

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

Additional Abbreviations/Acronyms Used:

X	Times	P/F	Playfield	D.T.	Drop Target(s)
LT	Left	S-U	Stand-Up	PPB	Playfield Power Board
RT	Right	Au.	Audit(s)	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	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 tollfree 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 a 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
LEFT SPEAKER	Left Sine
BOTH LT & RT SPEAKERS	Center Sine
RIGHT SPEAKER	Right Sine
VOICE ROM1 (Loc U17)	Speech Pattern 1:
VOICE ROM2 (Loc U21)	Speech Pattern 2:
VOICE ROM3 (Loc U36)	Speech Pattern 3:
MUSIC TEST (Sound ROM, Loc U7)	Level 1-3 Music

Note: The cabinet speaker should be on all the time.

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 (32 X 128 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. 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.)

SWITCH TESTS

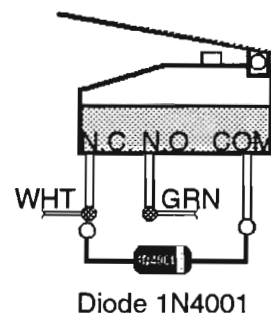
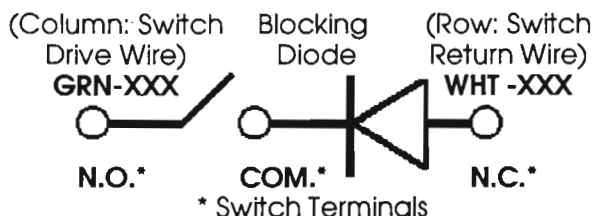
Switches are configured in an 8 x 8 matrix of columns (switch drives) and rows (switch returns) with up to 64 switches possible. The switch tests include three parts; switch test, active switches, and bad switches. Column and Row wire colors are indicated in each test using corresponding resistor color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



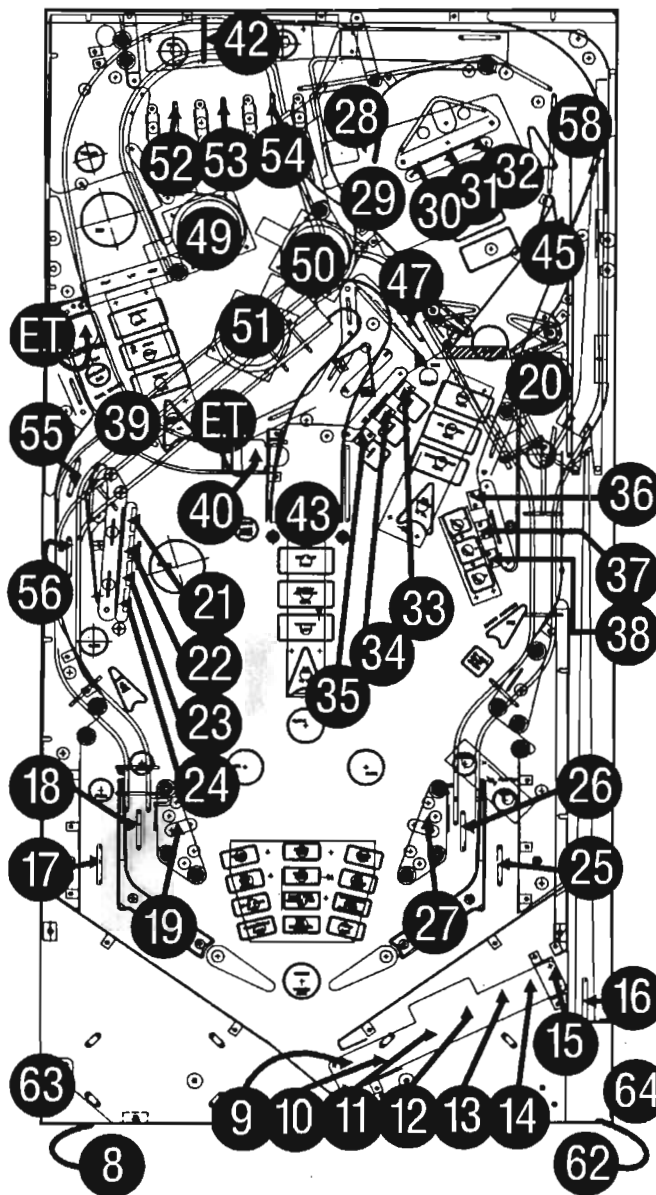
SWITCH MATRIX CHART

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	Ball Trough #1 LT 9	Left Outlane 17	Right Outlane 25	LT 3-Bank S-U "G" 33	Left Ramp Enter 41	Left Turbo Bumper 49	Not Used 57
2 WHT-RED CN10-8	4th Coin 2	Ball Trough #2 10	Left Return 18	Right Return 26	LT 3-Bank S-U "A" 34	Left Ramp Exit 42	BOT Turbo Bumper 50	Upper P/F Exit 58
3 WHT-ORN CN10-7	Credit Button 3	Ball Trough #3 11	Left Slingshot 19	Right Slingshot 27	LT 3-Bank S-U "T" 35	MID Ramp Enter 43	RT Turbo Bumper 51	Not Used 59
4 WHT-YEL CN10-6	Right Coin 4	Ball Trough #4 12	VUK 20	Eject 28	RT 3-Bank S-U "T" 36	MID Ramp Exit 44	Left Top Rollover 52	Not Used 60
5 WHT-GRN CN10-5	Center Coin 5	Ball Trough #5 13	LT Drop Target 1 "D" 21	Upper P/F Rollover 29	RT 3-Bank S-U "A" 37	RT Roll-over BOT 45	MID Top Rollover 53	Not Used 61
6 WHT-BLU CN10-3	Left Coin 6	Ball Trough #6 14	Left Drop Target 2 "A" 22	Upper P/F D.T. Left 30	RT 3-Bank S-U "G" 38	RT Roll-over TOP 46	Right Top Rollover 54	TAG Button 62
7 WHT-VIO CN10-2	Slam Tilt 7	Ball Trough #7 RT 15	Left Drop Target 3 "E" 23	Upper P/F D.T. MID 31	Under Trough 39	Captive Ball 47	Out of the Ring 55	LT Flipper Upper/Lower 63
8 WHT-GRY CN10-1	Extra Ball Button 8	Shooter Lane 16	Left D.T. BOT "D" 24	Upper P/F D.T. Right 32	Super VUK 40	Not Used 48	In the Ring 56	RT Flipper Upper/Lower 64

Switch Matrix Locations, Descriptions & Switch Part Numbers†

Switch Matrix No. & Description	Part No.
01* Plumb Tilt	See Cabinet
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 Ball Trough #1 Left	180-5119-00
10 Ball Trough #2	180-5119-00
11 Ball Trough #3	180-5119-00
12 Ball Trough #4	180-5119-00

Switch Matrix No. & Description	Part No.
13 Ball Trough #5	180-5119-00
14 Ball Trough #6	180-5119-00
15 Ball Trough #7 Right	180-5118-00
16 Shooter Lane	180-5100-01
17 Left Outlane	500-5707-00
18 Left Return Lane	500-5707-00
19 Left Slingshot	180-5023-00
20 Super VUK (Right Side)	180-5054-00
21 Left Drop Target 1 "D"	180-5092-01
22 Left Drop Target 2 "A"	180-5092-01
23 Left Drop Target 3 "E"	180-5092-01
24 Left Drop Target 4 "D"	180-5092-01
25 Right Outlane	500-5707-00
26 Right Return Lane	500-5707-00
27 Right Slingshot	180-5023-00
28 Next to Eject Switch	180-5090-00
29 Upper Playfield Rollover	500-5707-00
30 Upper Playfield D.T. LT "WWF"	180-5092-01
31 Upper Playfield D.T. MID "WWF"	180-5092-01
32 Upper Playfield D.T. RT "WWF"	180-5092-01
33 Amber LT 3-Bank Stand-Up "G"	515-5162-03
34 Amber LT 3-Bank Stand-Up "A"	515-5162-03
35 Amber LT 3-Bank Stand-Up "T"	515-5162-03
36 Yellow RT 3-Bank Stand-Up "T"	515-5162-06
37 Yellow RT 3-Bank Stand-Up "A"	515-5162-06
38 Yellow RT 3-Bank Stand-Up "G"	515-5162-06
39** Under Trough	180-5093-00
40** VUK (Middle)	180-5116-00
41 Left Ramp Enter	180-5090-00
42 Left Ramp Exit	180-5093-00
43 Middle Ramp Enter	180-5090-00
44 Middle Ramp Exit	180-5093-00
45 Right Rollover Bottom (LT Hand)	180-5707-00
46 Right Rollover Top	180-5707-00
47 Captive Ball	180-5706-01
48 Not Used	---
49 Left Turbo Bumper	180-5015-01
50 Bottom Turbo Bumper	180-5015-01
51 Right Turbo Bumper	180-5015-01
52 Left Top Rollover	180-5707-00
53 Middle Top Rollover	180-5707-00
54 Right Top Rollover	180-5707-00
55 "Out of the Ring"	180-5707-00
56 "Into the Ring"	180-5707-00
57 Not Used	---
58 Upper Playfield Exit	180-5707-00
59 Not Used	---
60 Not Used	---
61 Not Used	---
62* TAG Button	180-5093-00
63* Left Flipper Cabinet via Q7 (Transistor) on SSFB	180-5124-00
64* Right Flipper Cabinet via Q5 (Transistor) on SSFB	180-5124-00



* Location - In Cabinet
 ** Location - Under Playfield
 ET Enter Trough (Start Mode 1 & 2)
 † Specify Game No. (23) & 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

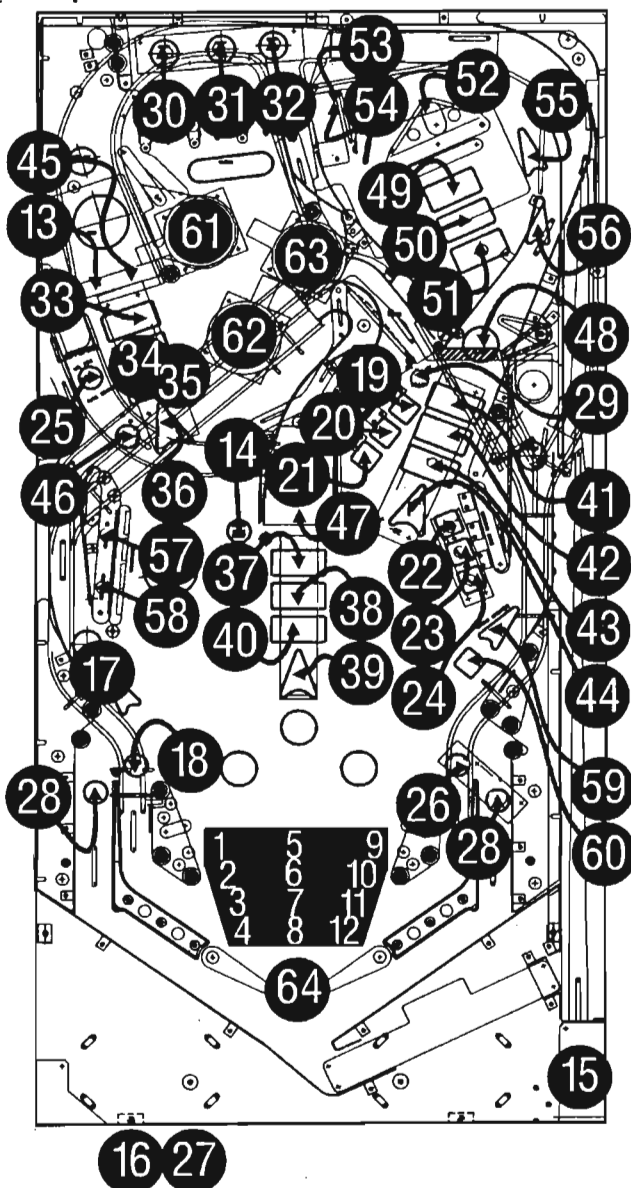
Column 18V R/W GND	1 Q71 YEL-BRN CN7-1	2 Q70 YEL-RED CN7-2	3 Q69 YEL-ORN CN7-3	4 Q68 YEL-BLK CN7-4	5 Q67 YEL-GRN CN7-6	6 Q66 YEL-BLU CN7-7	7 Q65 YEL-VIO CN7-8	8 Q64 YEL-GRY CN7-9
1 Q72 RED-BRN CN6-1	Rumble Left 1	Rumble Right 9	In The Ring Arrow 17	Extra Ball 25	Left Ramp Yokozuna 33	RT Ramp Crush 41	Upper P/F Left D.T. 49	Left D.T. Top 57
2 Q73 RED-BLK CN6-2	Lite Extra Ball 2	Tag Team Millions 10	Left Return 18	Right Return 26	Left Ramp Doink 34	RT Ramp Big Boss Man 42	Upper P/F MID D.T. 50	Left D.T. Bottom 58
3 Q74 RED-ORN CN6-3	No Holds Brawl 3	Champ. Belt Rnd. 11	TOP Left S.U. "G" 19	Buy-A- Ball 27	Left Ramp Tantanka 35	RT Rp. Shawn Michaels 43	Upper P/F Right D.T. 51	Macho Madness 59
4 Q75 RED-YEL CN6-5	Pande- monium 4	Banzai 12	MID Left S.U. "A" 20	LT & RT Outlanes 28	Left Jackpot 36	Right Jackpot 44	Upper D.T. Ready 52	Multi-Ball Start 60
5 Q76 RED-GRN CN6-6	Rumble Middle 5	Enter the Ramp 13	BOT Left S.U. "T" 21	Collect Tag 29	MID Ramp Bret Hart 37	Banzai 45	Left Over Eject 53	Left Turbo Bumper 61
6 Q77 RED-BLU CN6-7	Search for Doink 6	Mode Start Left 14	TOP Right S.U. "T" 22	Left Top Lane 30	MID Ramp Hacksaw 38	Mode Start Mid 46	Right Over Eject 54	BOT Turbo Bumper 62
7 Q78 RED-VIO CN6-8	Super Pops Sleeper Hold 7	TAG Button 15	MID Right S.U. "A" 23	Middle Top Lane 31	MID Ramp Lex Luger 39	MID Ramp Qualify 47	Increase Jackpot 55	RT Turbo Bumper 63
8 Q79 RED-GRY CN6-9	Raise the Undertaker 8	Credit Button 16	BOT Right S.U. "G" 24	Right Top Lane 32	Middle Jackpot 40	RT Orbit Qualify 48	Up. P/F Exit 56	Wrestle Again 64

Lamp Matrix Location and Descriptions

Lamp Matrix No. & Description	
01	Rumble (Left)
02	Lite Extra Ball
03	No Holds Brawl
04	Pandemonium
05	Rumble (Middle)
06	Search for Doink
07	Super Pops Sleeper Hold
08	Raise The Undertaker
09	Rumble (Right)
10	Tag Team Millions
11	Championship Belt Round
12	Banzai
13	Enter the Ramp (Yellow) (Upper Playfield Ready)
14	Mode Start 2
15	TAG Button

Lamp Matrix No. & Description	
16	Credit Button
17	In The Ring (Under Coffin)
18	Razor Ramon (Left Return)
19	Top Left Stand-Up "G"
20	Middle Left S.U. "A"
21	Bottom Left S.U. "T"
22	Top Right S.U. "T"
23	Middle Right S.U. "A"
24	Bottom Right S.U. "G"
25	Extra Ball
26	Macho Man Randy Savage (Right Return)
27	Buy-A-Ball
28	Special (Left & Right Outlanes)
29	Collect Tag

Lamp Matrix No. & Description	
30	Left Top Lane
31	Middle Top Lane
32	Right Top Lane
33	Yokozuna (Left Ramp)
34	Doink (Left Ramp)
35	Tantanka (Left Ramp)
36	Jackpot (Left)
37	Bret "Hitman" Hart (Middle Ramp)
38	Hacksaw Jim Duggan (Middle Ramp)
39	Lex Luger (Middle Ramp)
40	Jackpot (Middle)
41	Crush (Right Ramp)
42	Big Boss Man (RT Ramp)
43	Shawn Michaels (Right Ramp)
44	Jackpot (Right)
45	Banzai (Orange) (Left Ramp Qualify)
46	Mode Start 1
47	Lite Mode Start (White) (Middle Ramp Qualify)
48	Right Orbit Qualify (Clear)
49	Upper P/F Left Drop Target
50	Upper P/F MID Drop Target
51	Upper P/F Right D.T.
52	Upper Drop Targets Ready
53	Left Over Eject (Yellow)
54	Right Over Eject (Green)
55	Increase Jackpot (Up. P/F Arrow Top)
56	Upper Playfield Exit (Up. P/F Arrow Bottom)
57	Coffin (Yellow) LT D.T.
58	Coffin (Orange) LT D.T.
59	Macho Madness
60	"M-Ball" (Multi-Ball) Start
61	Left Turbo Bumper
62	Bottom Turbo Bumper
63	Right Turbo Bumper
64	"Wrestle" (Same Player Shoots) Again



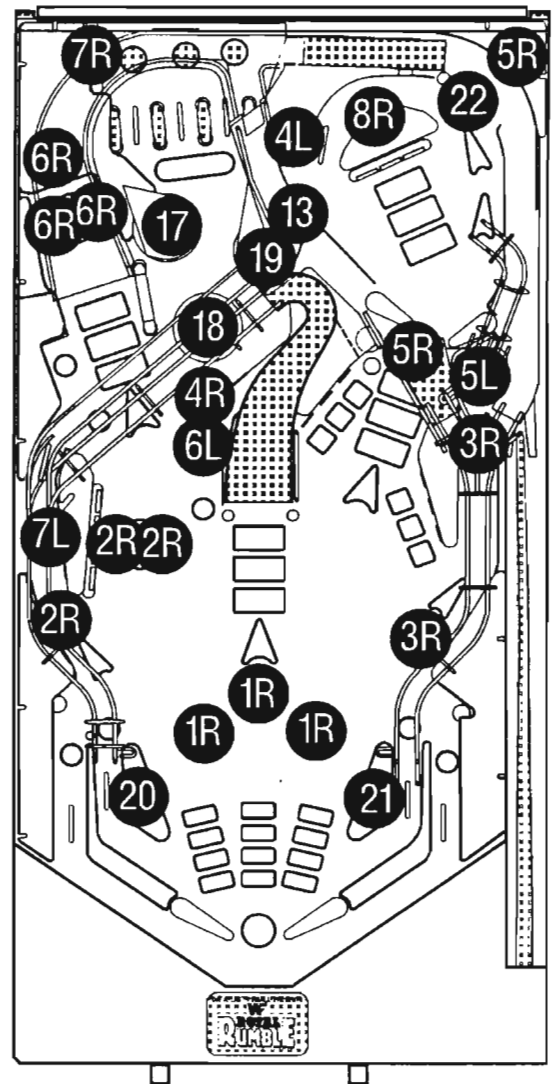
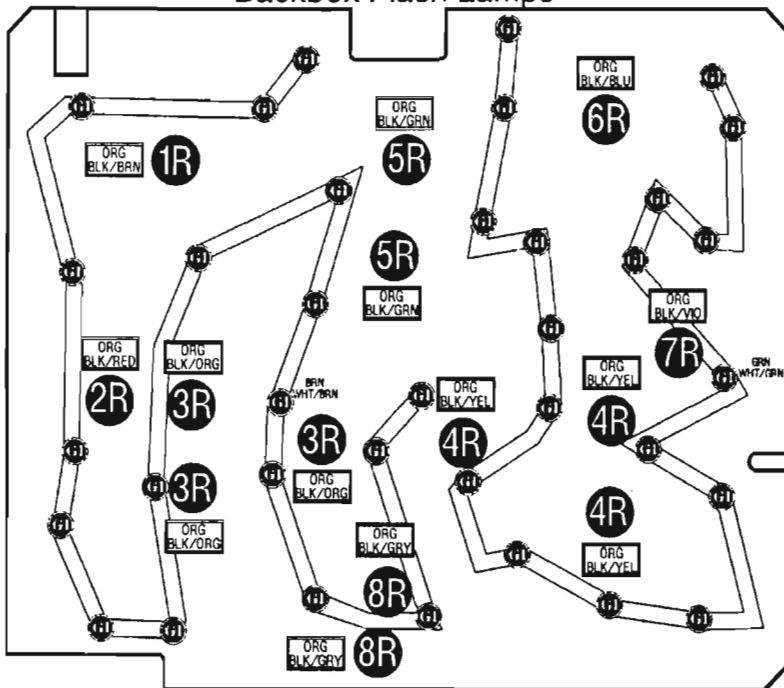
Pleas Note:
General Illumination (G.I.) Lamps are not shown. For Bulb Types and Sockets, see pages 44 & 45

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	6-BALL ASS'Y LOCKOUT	8R	UPPER P/F RIGHT FLASH
1R	LOWER OPEN P/F	09	UPR. P/F 3-BANK D.T.
2L	BALL RELEASE (EJECT)	10	LEFT/RIGHT (A/B) RELAY
2R	DROP TARGETS FLASH	11	G.I. RELAY
3L	AUTO BALL LAUNCH 50V	12	BACK PANEL DIVERTER
3R	RT MACHO MAD. FLASH	13	UPR. P/F LEFT DIVERTER
4L	KICKER, EJECT	14	Not Used
4R	SUPER VUK FLASH	15	Not Used
5L	VUK 50V	16	SHAKER MOTOR
5R	RIGHT ORBIT FLASH	17	LEFT TURBO BUMPER
6L	SUPER VUK 50V	18	BOT TURBO BUMPER
6R	LEFT RAMP FLASH	19	RIGHT TURBO BUMPER
7L	LT. 4-BANK DROP TARGET	20	LEFT SLINGSHOT
7R	TOP LANES FLASH	21	RIGHT SLINGSHOT
8L	KNOCKER	22	UPR. P/F RIGHT DIVERTER

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

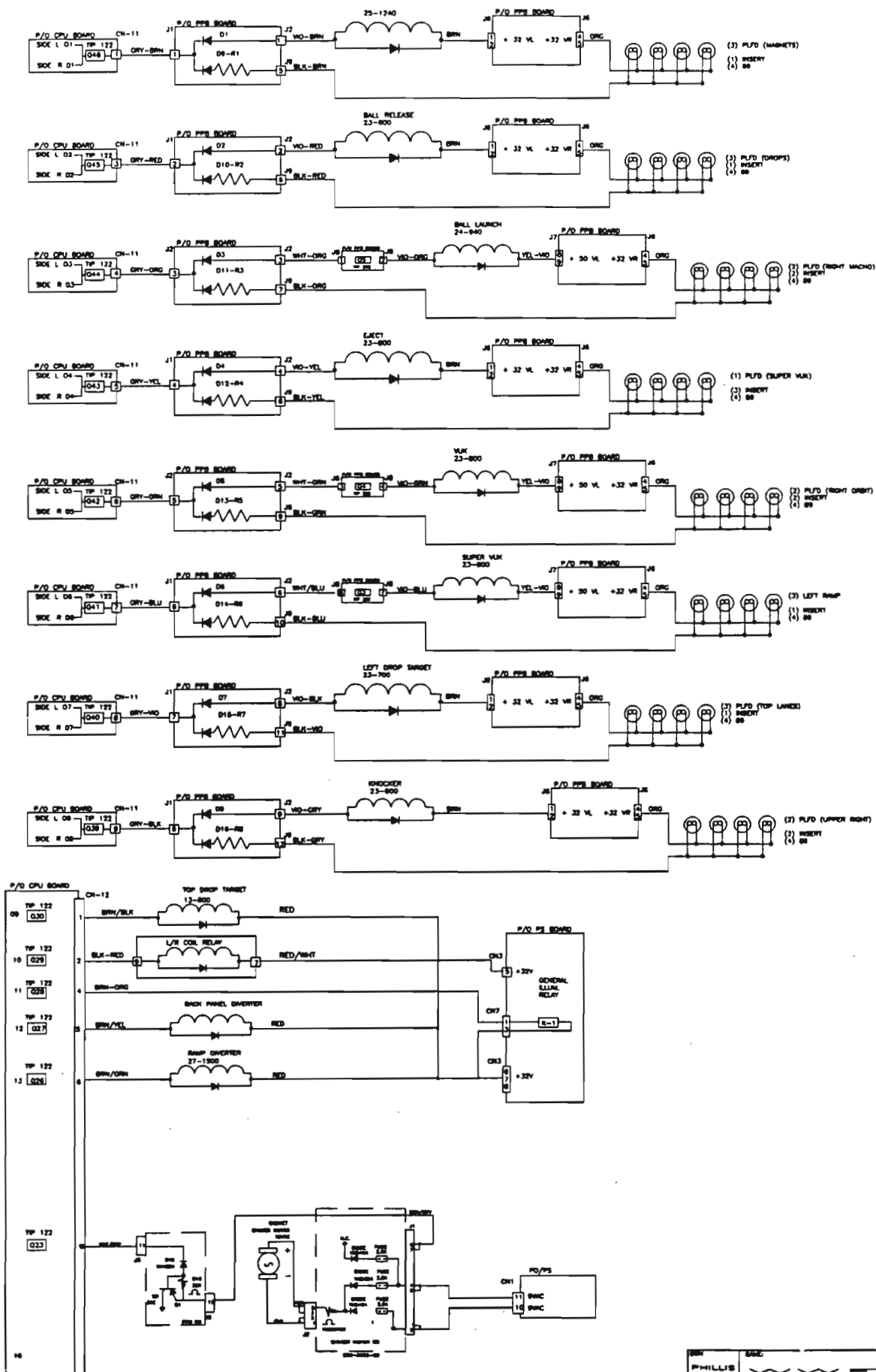
Switched, CPU Controlled Auxillary & Constant Power Solenoids

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: 6-Ball Assembly Lockout	Q46	CPU	VIO-BRN	PPB J2-1	BRN	PPB J6-1, 2	32v L	25-1240
1R	Flashlamp: X3 P/F, X1 Insert Lower Playfield Flash			BLK-BRN	PPB J9-5	ORG	PPB 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: X3 P/F, Insert X1 Drop Targets Flash			BLK-RED	PPB J9-6	ORG	PPB J6-4, 5	32v R	Bulb #89
3L	Coil: Auto Ball Launch 50v	Q5	PPB	VIO-ORG	PPB J8-2	YEL/VIO	PPB J7-8	50v L	24-940
3R	Flashlamp: X2 P/F, Insert X2 Right Macho Madness Flash	Q44	CPU	BLK-ORG	PPB J9-7	ORG	PPB J6-4, 5	32v R	Bulb #89
4L	Coil: Kicker, Eject	Q43	CPU	VIO-YEL	PPB J2-4	BRN	PPB J6-1, 2	32v L	23-800
4R	Flashlamp: X1 P/F, Insert X3 Super VUK Flash			BLK-YEL	PPB J9-8	ORG	PPB J6-4, 5	32v R	Bulb #89
5L	Coil: VUK 50v	Q4	PPB	VIO-GRN	PPB J8-4	YEL/VIO	PPB J7-8	50v L	23-800
5R	Flashlamp: X2 P/F, Insert X2 Right Orbit Flash	Q42	CPU	BLK-GRN	PPB J9-9	ORG	PPB J6-4, 5	32v R	Bulb #89
6L	Coil: Super VUK 50v	Q3	PPB	VIO-BLU	PPB J8-7	YEL/VIO	PPB J7-8	50v L	23-800
6R	Flashlamp: X3 P/F, Insert X1 Left Ramp Flash	Q41	CPU	BLK-BLU	PPB J9-10	ORG	PPB J6-4, 5	32v R	Bulb #89
7L	Coil: Left 4-Bank Drop Target	Q40	CPU	VIO-BLK	PPB J2-8	BRN	PPB J6-1, 2	32v L	23-700
7R	Flashlamp: X3 P/F, Insert X1 Top Lanes Flash			BLK-VIO	PPB J9-11	ORG	PPB J6-4, 5	32v R	Bulb #89
8L	Coil: Knocker (In Cabinet)	Q39	CPU	VIO-GRY	PPB J2-9	BRN	PPB J6-1, 2	32v L	23-800
8R	Flashlamp: X1 P/F, Insert X2 Upper P/F Right Flash			BLK-GRY	PPB J9-12	ORG	PPB J6-4, 5	32v R	Bulb #89
09	Coil: Upper P/F 3-Bank Drop Target	Q30	PPB	BRN-BLK	CPU CN 12-1	RED	PS CN 3-6,7,8	32v	23-800
10	Coil: Located on PPB In Backbox Left & Right Relay	Q29	CPU	BLK-RED	CPU CN 12-2	RED/WHT	PS CN 3-5	32v	24v DC 10A DPDT
11	Coil: Located on Power Supply Bd. G.I. Relay	Q28	CPU	BRN-ORG	CPU CN 12-4	RED	PS CN 3-6,7,8	32v	24v DC 10A DPDT
12	Coil: Back Panel Diverter	Q27	CPU	BRN-YEL	CPU CN 12-5	RED	PS CN 3-6,7,8	32v	32-1800
13	Coil: Upper Playfield Left Diverter	Q26	CPU	BRN-GRN	CPU CN 12-6	RED	PS CN 3-6,7,8	32v	27-1500
14	Coil: Not Used	---	---	---	---	---	---	---	---
15	Coil: Not Used	---	---	---	---	---	---	---	---
16	Coil: Shaker Motor	Q1	PPB	BRN-GRY	PPB J8-11	---	---	---	---
17	Coil: Left Turbo Bumper	Q11	CPU	BLU-BRN	CPU CN 19-7	RED	PS CN 3-6	32v	23-800
18	Coil: Bottom Turbo Bumper	Q9	CPU	BLU-RED	CPU CN 19-4	RED	PS CN 3-6	32v	23-800
19	Coil: Right Turbo Bumper	Q8	CPU	BLU-ORG	CPU CN 19-3	RED	PS CN 3-6	32v	23-800
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: Upper Playfield Right Diverter	Q13	CPU	BLU-BLK	CPU CN 19-9	RED	PS CN 3-6	32v	27-1500

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 22-1080	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 8vAC Q2, Q3, SR1 CN2-4,5
SSFB 1	Lwr. Lt. Flipper 22-1080	BLU-GRY SSFB CN1-10	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 8vAC Q1, Q10, SR2 CN2-1,2
SSFB 2	Upr. Rt. Flipper 25-1800	GRY-VIO SSFB CN1-10	GRN-GRY CPU CN8-9 TO SSFB CN1-4	WHT-GRY CPU CN10-1 TO SSFB CN1-3	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 8vAC Q2, Q3, SR1 CN2-4,5
SSFB 2	Upr. Lt. Flipper 25-1800	GRY-BLK SSFB CN1-10	GRN-GRY CPU CN8-9 TO SSFB CN1-4	WHT-VIO CPU CN10-1 TO SSFB CN1-3	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 8vAC Q9, Q10, SR2 CN2-1,2

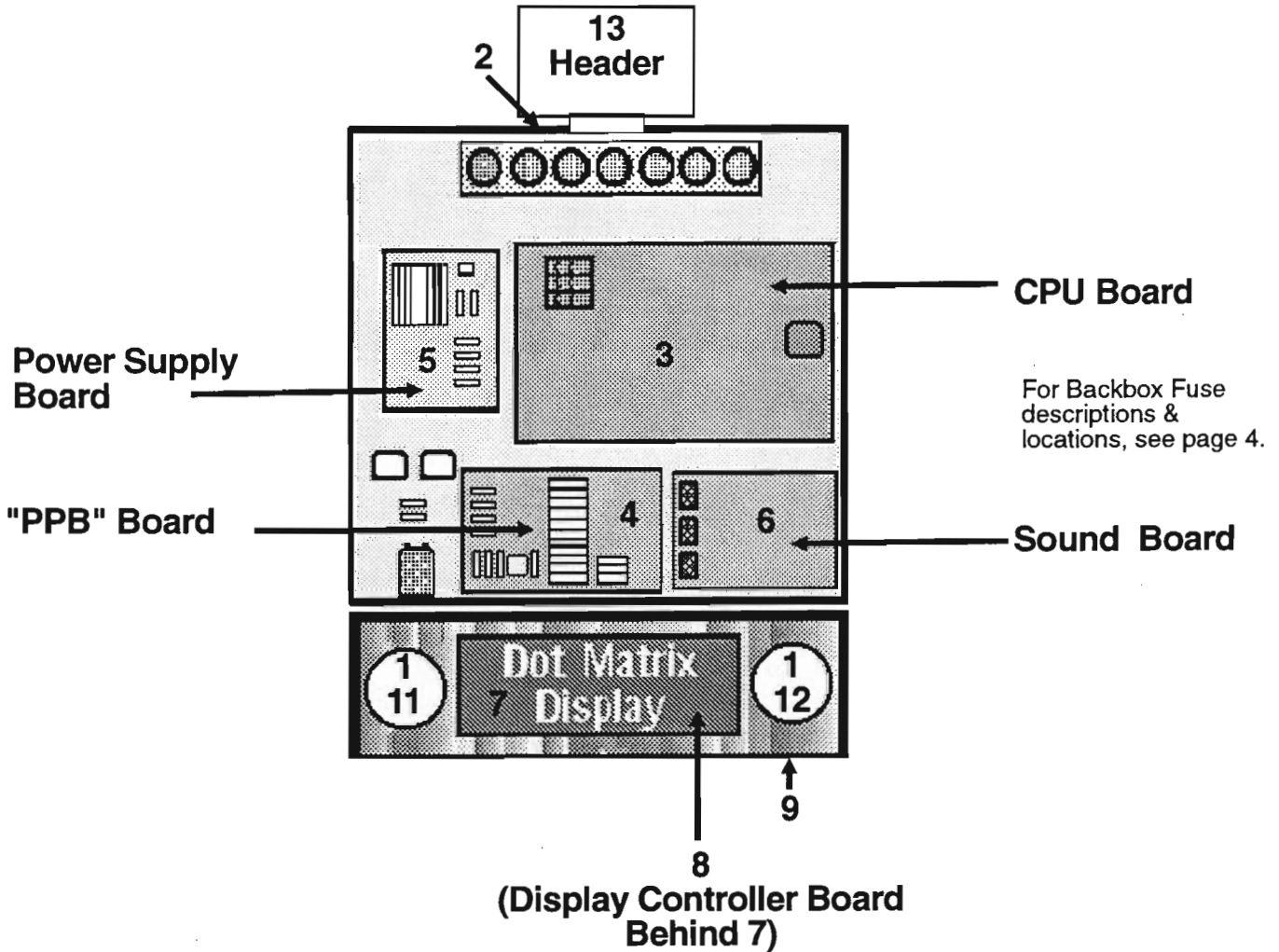
6 BALL ASSY LOCKOUT



REV	DATE
PHILLIPS	
DATA EAST PINBALL, INC.	
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PARTS IDENTIFICATION

Backbox Parts

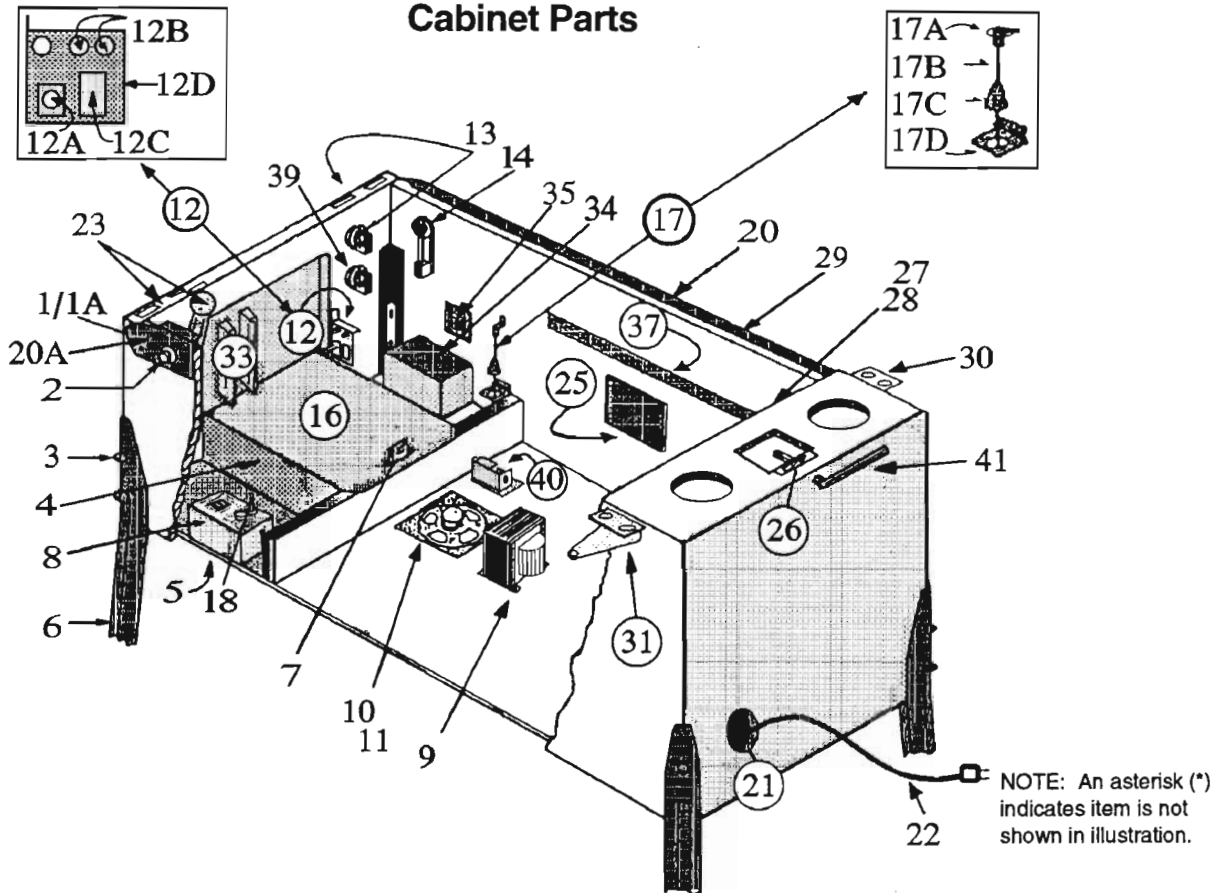


NOTE: An asterisk (*) indicates item is not shown in illustration.

Item	Description	Part No.	Item	Description	Part No.
1	Speakers	031-5004-00	15 *	Static Shield *	535-6437-00
2	Back Box Lock	355-5008-00	16 *	Backglass Clear *	660-5008-00
3	CPU Bd. Non-Reflexive †	520-5003-04	17 *	26" Plastic Extrusion *	545-5018-04
4	PPB Board Ass'y Rev. C	520-5021-05	18 *	21-3/8" Plastic Extr. (2) *	545-5018-07
5	Power Supply	520-5047-02	19 *	Glass Channel 26-1/16 *	545-5021-01
6	Sound Board 4MB †	520-5077-00	20 *	Insert WWF *	525-5342-00
7	Dot Matrix Display Board 128 X 32 ††	520-5052-00	21 *	Ribbon Cable, 14-Pin * Display to Display	602-5005-14
8	Display Controller Bd. †	520-5055-01	22 *	Ribbon Cable, 20-Pin * CPU to Sound Board	602-5005-20
9	Speaker Housing	545-5180-02	23 *	Ribbon Cable, 26-Pin * CPU to Display	602-5005-26
10 *	WWF Backglass Artwork *	830-5223-00	† When ordering PC Boards with ROMS, please specify the Game Name. †† Indicate Manufacturer		
11	Speaker Grill Left WWF	830-5622-00			
12	Speaker Grill Right WWF	830-5622-00			
13	Backbox Header	545-5456-00			
14 *	Dot Matrix Clear Butyrate *	830-5436-00			

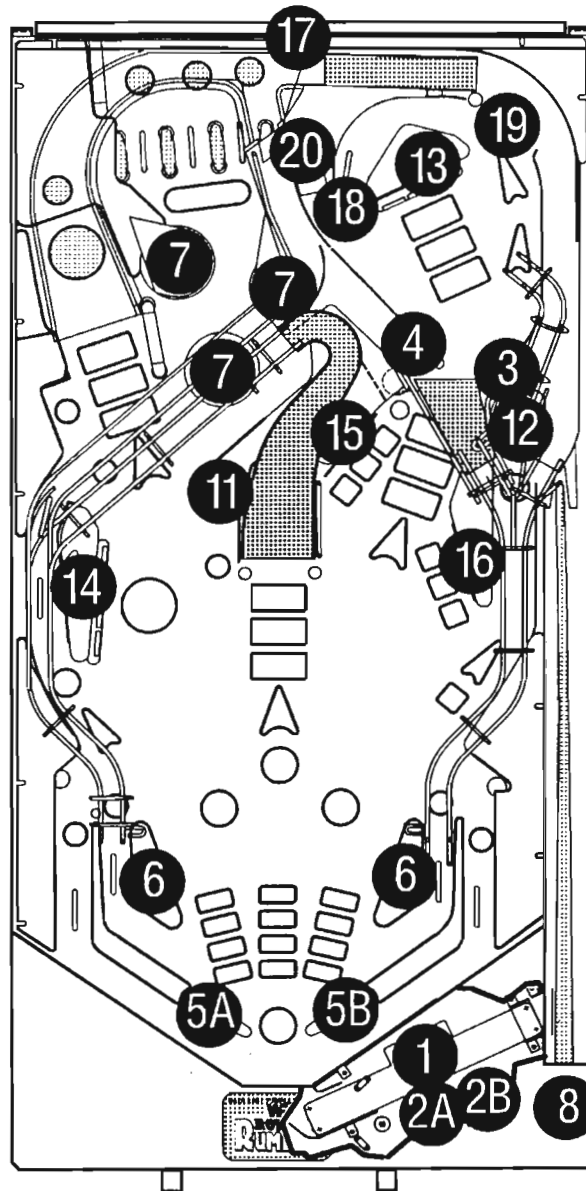
PARTS IDENTIFICATION

Cabinet Parts



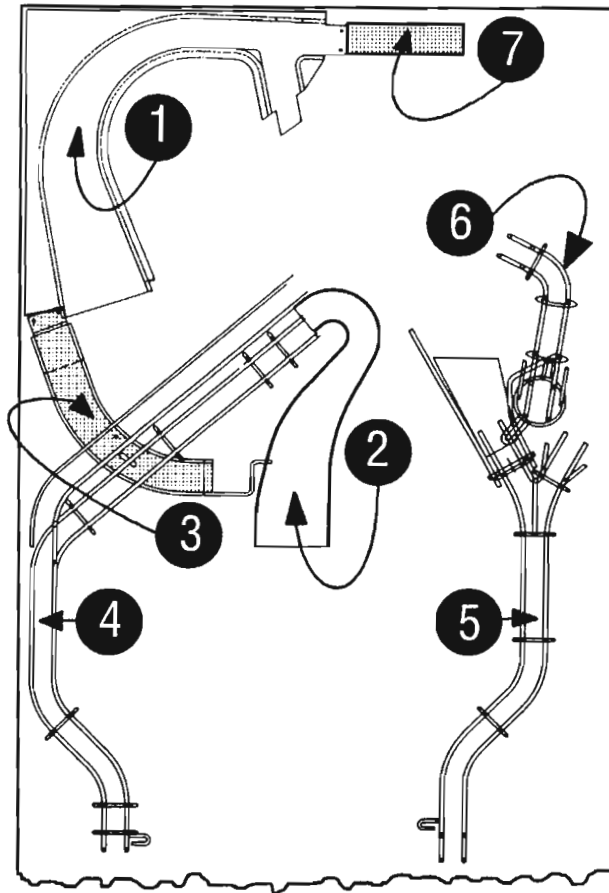
Item	Description	Part No.	Item	Description	Part No.
1	Tag Button Housing w/Button & Sw.	500-5815-00	20/A	Side Armor - Left & Right	535-6831-00
1A	Illuminated Tag Button & Sw. Only	500-5816-00	21	Recessed Cup for Line Cord	545-5122-00
2	Flipper Button Red Assy (Solid) (X2)	500-5026-32	22	Line Cord 10' ROJ 3" Maximum	034-5000-10
3	Leg Bolt (Black) 3/8-16 x 2-3/8 Hex Hd.	231-5000-01	23*	Front Molding Lockdown Assy*	500-5020-00
4	Cash Box Plastic Bottom	545-5090-00	24*	Front Molding - Black *	500-5021-10
5	Power Switch DPST Toggle	180-5001-00	25	Solid State 2-Flipper Bds. (SSFB) (X2)	520-5080-00
6	Leg (Black) X4	535-5020-30	26	#1 Roto Lock Male, (Female -02)*	355-5006-01
7	Cash Box Lock Bracket	535-5215-00	27	Rear Plastic Ext. P/F Glass	545-5038-02
8	Service Outlet	515-5360-00	28	Mounting Fm. Rubber for Ext.	626-5004-00
9	Transformer	010-5003-00	29	Plastic Channel Left & Right	545-5017-00
10	Speaker-Round - 8"	031-5005-00	30	Backbox Hinge Left	535-6781-00
11	Speaker Grill 7X7	545-5072-03	31	Backbox Hinge Right	535-6781-01
12	Cabinet Switch Bracket Assembly	500-5602-01	32*	Leg Leveler * 8-16x3" X4	500-5017-00
12A	Memory Protect Switch	180-5000-00	33	Coin Door (w/Validator) USA	500-5018-17
12B	Service Switch Set	180-5012-00	34	Shaker Motor	515-5893-00
12C	Interlock Switch	180-5136-00	35	Shaker Motor P.C. Board	520-5065-00
12D	Cabinet Switch Bracket w/Interlock	535-6409-01	36	Slide & Pivot Support Brkt. Right*	535-5989-00
13	Start Button Switch Ass'y (WWF)	500-5728-03	37*	Slide & Pivot Spt. Brkt. Left	535-5990-00
14	Flipper Switch, Left, Top/Bottom	180-5122-00		Edge Slide Bracket *	535-5988-00
15*	Flipper Switch, Right, Top/Bottom *	180-5122-00		Playfield Support Slide Rev. A *	535-6862-00
16	Cash Box Cover (Validator)	535-5013-03	38 *	Playfield Support Bar * (Stay Arm)	535-5019-00
17	Plumb Bob Tilt Assembly	500-5023-00	39	Extra Ball Switch Ass'y (Orange)	500-5779-07
17A	Hanger Bracket (tilt)	535-5221-00	40	Knocker Assembly	500-5081-00
17B	Hanger Wire (tilt) (Attach to "17A")	535-5319-00	41	5/16" Hex Key Allen Wrench	777-0001-00
17C	Plumb Bob (tilt) (Attach to "17B")	535-5029-00	42 *	Backbox/Cabinet Matrix/Fuse Info *	820-6104-01
17D	Contact Bracket (tilt)	535-5220-00	43 *	Safety Barrier (Cashbox Cover) *	545-5336-00
18	Volume Control Single 10K Pot	123-5000-02	44 *	Cable Harness Hold Back X2 (Left & Right Side inside backwall Cabinet) *	535-6893-00
19 *	Playfield Glass (T.P.) 22-3/4" x 43" *	660-5014-00	45*	Flipper Board Cover X2 *	545-5165-00

PLAYFIELD - MAJOR ASSEMBLIES



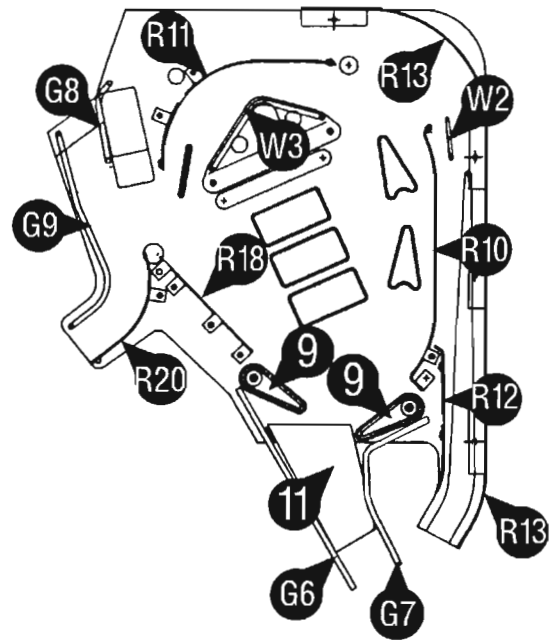
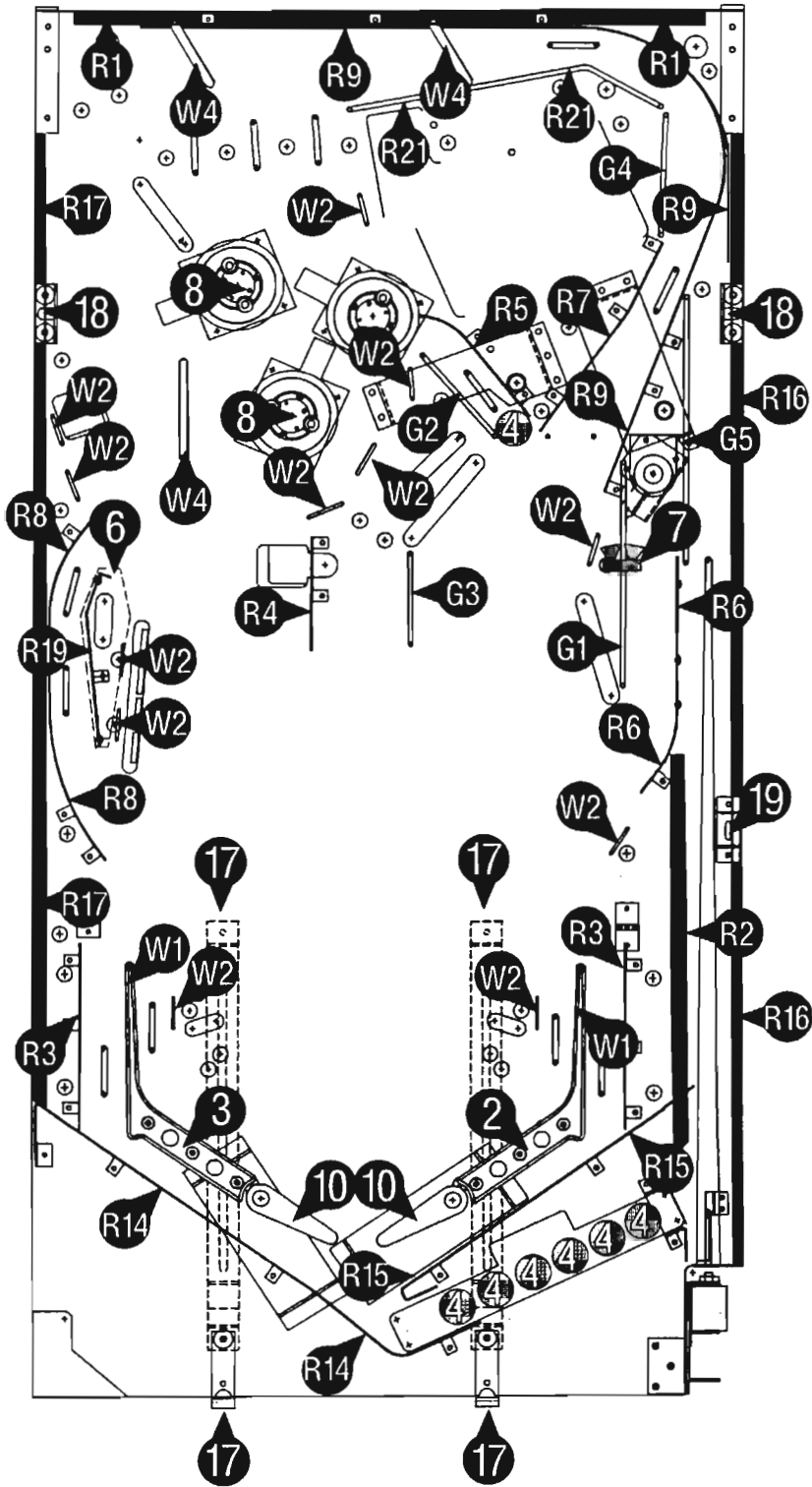
Item	Description	Part No.	Item	Description	Part No.
1	6-Ball Switch Assembly (Under Playfield)	500-5683-01	9 & 10 In Cabinet, See Pg. 39		
2a	Lock Ball Assembly (Under Arch, Above Playfield)	500-5684-01	9	Shaker Motor	515-5893-00
2b	Deflector for 6-Ball Ass'y (Under Arch)	535-6606-01	10	Knocker Ass'y	500-5081-00
3	Flipper Assembly Upper (Right)	500-5820-01	11	Super VUK Ass'y (Left, Middle)	500-5767-01
4	Flipper Assembly Upper (Left)	500-5820-02	12	VUK Assembly (Right)	500-5690-01
5A	Flipper Assembly Lower Right	500-5755-01	13	Drop Target 3-Bank Assembly	500-5799-03
5B	Flipper Assembly Lower Left	500-5755-02	14	Drop Target 4-Bank Assembly	500-5799-04
6	Slingshot Assembly (X2)	500-5226-00	15	Stand-Up Target Ass'y Amber	500-5232-03
7	Turbo Bumper (X3)	500-5227-00	16	Stand-Up Target Ass'y Yellow	500-5232-06
8	Ball Kicker (Auto Launch) Ass'y	500-5477-02	17	Bankpanel Diverter Assembly	515-6019-00
			18	Diverter Assembly Left	500-5770-00
			19	Diverter Assembly Right	500-5770-01
			20	Kicker, Eject Assembly	500-5758-00

PLAYFIELD - MAJOR RAMP ASSEMBLIES & RELATED PARTS



Item	Description of Ramps	Part No.	Item	Description of Ramps	Part No.	
1	Plastic Left Ramp Assy	500-5811-00	2 cont.	G.A. Switch Protect Plate	535-6539-00	
	Left Plastic Ramp	545-5438-00		G.A. Switch Diode 1N4001	112-5001-00	
	Gate Ass'y (G.A.)	515-6025-00		G.A. Cable	036-5341-02	
	G.A. Entrance (G.A.)	535-6881-00		Ramp Flap	535-6789-00	
	G.A. Entr.#6 Truss Head	237-5809-00		Switch Assembly (S.A.)	180-5093-00	
	G.A. Entr. #6-32X3/8 PH 8 PLS	232-5201-00		S.A. Protector Plate	535-6539-00	
	G.A. Entr. 5/8" Hex Spacer	254-5000-02		S.A. 2-56X3/8 Screw (2)	237-5872-00	
	G.A. Entr. Wire Form	535-6882-00		S.A. Diode 1N4001	112-5001-00	
	G.A. Entr. Butyrate	830-5452-29		S.A. Cable	036-5341-03	
	G.A. Entr. Switch Ass'y (S.A.)	180-5090-00		3	Under Trough Assembly	500-5768-00
	*Sw. Parts Same as Center Ramp	-----			Plastic Under Trough (U.T.)	545-5439-00
	G.A. Entr. Ramp Flap	535-6880-00			U.T. Bracket	535-5794-01
	G.A. Entr. Ramp Prot. (2 pcs)	535-6964-00			U.T. Micro Switch	180-5093-00
	G.A. Entr. Clear Butyrate	830-5452-35			U.T. Protector Plate	535-6539-00
	G.A. Exit	515-6021-00			U.T. Diode	112-5001-00
	G.A. Exit Ramp Gate	535-6884-00			U.T. Lock Washer	244-5001-00
	G.A. Exit Wire Gate	535-6883-00			U.T. 2-56X5/8 Screw (2)	237-5872-00
G.A. Exit Switch Ass'y (S.A.)	180-5090-00	4	Left Wire Form Ramp		535-6776-00	
*Sw. Parts Same as Center Ramp	-----		Steel Ramp to Left Return Lane			
2	Center Steel Ramp Assy	500-5760-00	5	Right Wire Form Ramp	535-6777-00	
	Steel Ramp	515-6030-00		Upper P/F to Right Return Lane		
	Gate Assembly (G.A.):	515-6029-00	6	Short Wire Form Ramp	535-6778-00	
	G.A. Entrance	535-6890-00		Right VUK to Upper P/F		
	G.A. Wire Form	535-6891-00		7	Steel Flat Ramp	535-6957-00
	G.A. Butyrate	830-5452-30	Left Plastic Ramp to Upper P/F			
	G.A. Switch	180-5090-00				
G.A. Switch 2-56 Sems (2)	237-5872-00					
(Continued in next column)						

PLAYFIELD - TOP PARTS (LOCATIONS)
 (See Tables on next page for descriptions/part numbers)



Upper Playfield Locations

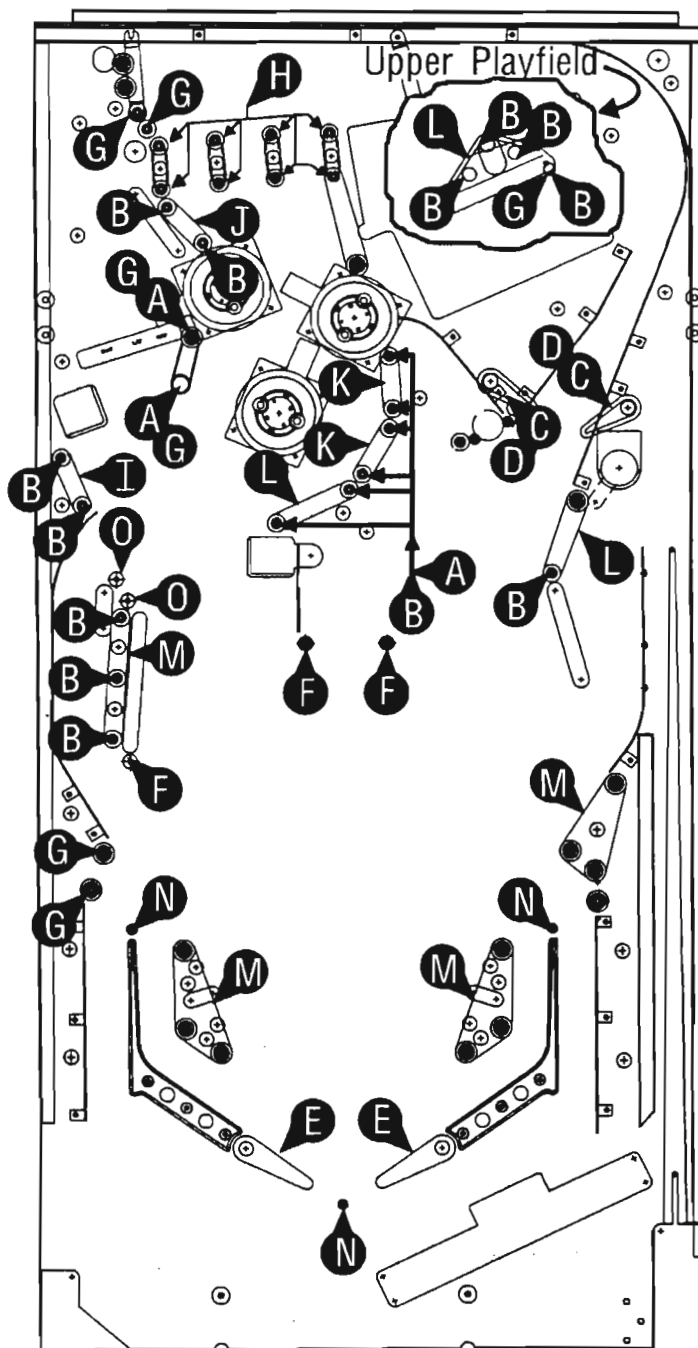
PLAYFIELD - TOP PARTS (TABLES)

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

Item	Description	Part No.	Item	Description	Part No.
1	Bottom Arch Assembly (Metal)	500-5776-00	12*	Bracket Butyrate 90° X3	535-5911-01
2	Ball Guide - Right Return	550-5037-01	13*	Lite Cover - (Flo. Orange) X3	545-5014-10
3	Ball Guide - Left Return	550-5037-01	14*	Lite Cover - (Yellow) X3	545-5014-06
4	1-1/16" Steel Balls, 1-Captive, 6-Play (7 Total)	260-5000-00	15*	Lite Cover - (Green) X1	545-5014-04
			16*	Lite Cover - (White) X1	545-5014-08
5*	Shooter Lane Launch Ramp	535-6772-00	17	Playfield Hanging Bracket X2	535-5216-00
6	Coffin Assembly (Butyrate & Lights)	500-5814-00	18	Pivot Pin Bracket Ass'y X2, with Pivot Bracket Screws X4, and T-Nut X4	500-5329-00
					237-5907-00
7	Spotlite & Bracket Assembly Spotlite Bracket Lite Cover Reflector	500-5818-00 535-6992-00 545-5409-01	19	Stay Arm Holder	535-5747-00
8	Pop Bumper Cap (Red) X2	550-5057-02	Item	Desc.: Butyrate	Part No.
9	Short Flippers & Shaft Ass'y White Upper Playfield X2	515-6006-01	20*	P/F Butyrate Pieces (01-31)†	830-5452-XX
10	Long Flippers & Shaft Ass'y White Lower Playfield X2	515-5133-01	† To order replacement Butyrate, fill in the last 2 numbers with the corresponding # printed on each piece. For Clear Butyrate, describe location. The clear butyrate over the Right Pop Bumper is -25, and over the Left Pop Bumper is -26.		
11	Mini Playfield Exit Gate	535-6885-00			

Item	Desc.: Mylar	Part No.	Item	Desc.: Ball Guides (G)	Part No.
□ *	Mylar Pieces (Clear Pre-Scored)	820-5838-00	G1	Ball Guide Rail 7-3/8" Straight	535-6492-00
□ *	Mylar Pad (Clear approx. 1"sq. Entrance to Return Lanes X2)	820-5815-00	G2	Ball Guide Rail 3.5"	535-6492-08
			G3	Ball Guide Rail 3.0"	535-6492-09
□ *	Front of Slingshot Clear Mylar	820-5821-00	G4	Ball Guide Rail 4.0"	535-6492-11
			G5	Ball Guide Rail 10.8"	535-6546-01
Item	Desc.: Rails (R)	Part No.	G6	Ball Guide Rail Upr. P/F Left	535-6835-00
R1	Playfield Wood Rail 21-7/8"	525-5007-31	G7	Ball Guide Rail Upr. P/F Right	535-6836-00
R2	Middle Wood Rail 11.89"	525-5335-00	G8	Ball Guide Rail Right Mini P/F	535-6949-00
R3	Bottom Rail (X2)	535-6750-00	G9	Ball Guide Rail Left Mini P/F	535-6950-00
R4	Center Rail (Rt. of Middle Hole)	535-6753-00			
R5	Captive Ball Rail	535-6755-00	Item	Desc.: Wire Forms (W)	Part No.
R6	Middle Right Rail	535-6756-00	W1	Wire Form on Ball Guides X2	535-5642-00
R7	Top Right Rail Orbit Left	535-6757-00	W2	Wire Form 1" X13	535-5300-05
R8	Middle Left Rail	535-6758-00	W3	Upper P/F D.T. Wire	535-6754-00
R9	Top Right Rail Orbit Right	535-6759-00	W4	Wire Gate (Not on Ramps) X2	535-5307-02
R10	Right Loop Rail	535-6764-00			
R11	Upper Loop Rail	535-6765-00	Item	Desc.: Decals	Part No.
R12	Upper Left Exit Rail	535-6876-00	□ *	Complete Decal Sheet ††	820-6098-XX
R13	Upper Right Exit Rail	535-6877-00	†† To order individual decals, describe decal and location. Note the last 2-digit number given.		
R14	Bottom Arch Flat Rail Left	535-6933-00			
R15	Bottom Arch Flat Rail Right	535-6934-00			
R16	Steel Rail Right	535-6945-00	Other Part Numbers:		
R17	Steel Rail Left	535-6946-00	Switches, Pg. 29	Rubber Parts, Pg. 42	
R18	Flat Rail Mini (Upper) Playfield	535-6951-00	Backbox Parts, Pg. 36	Plastic/Metal Posts, Pg. 43	
R19	Left Drop Target Rail	535-6954-00	Cabinet Parts, Pg. 37	Sockets/Lamps, Pgs. 44/45	
R20	Flat Rail Mini-P/F Exit Right	515-6015-00	Major Asm's, Pg. 38		
R21	Top Wire Upr. (Under Mini-P/F)	535-6760-00	Ramps & Parts, Pg. 39		

PLAYFIELD - RUBBER PARTS

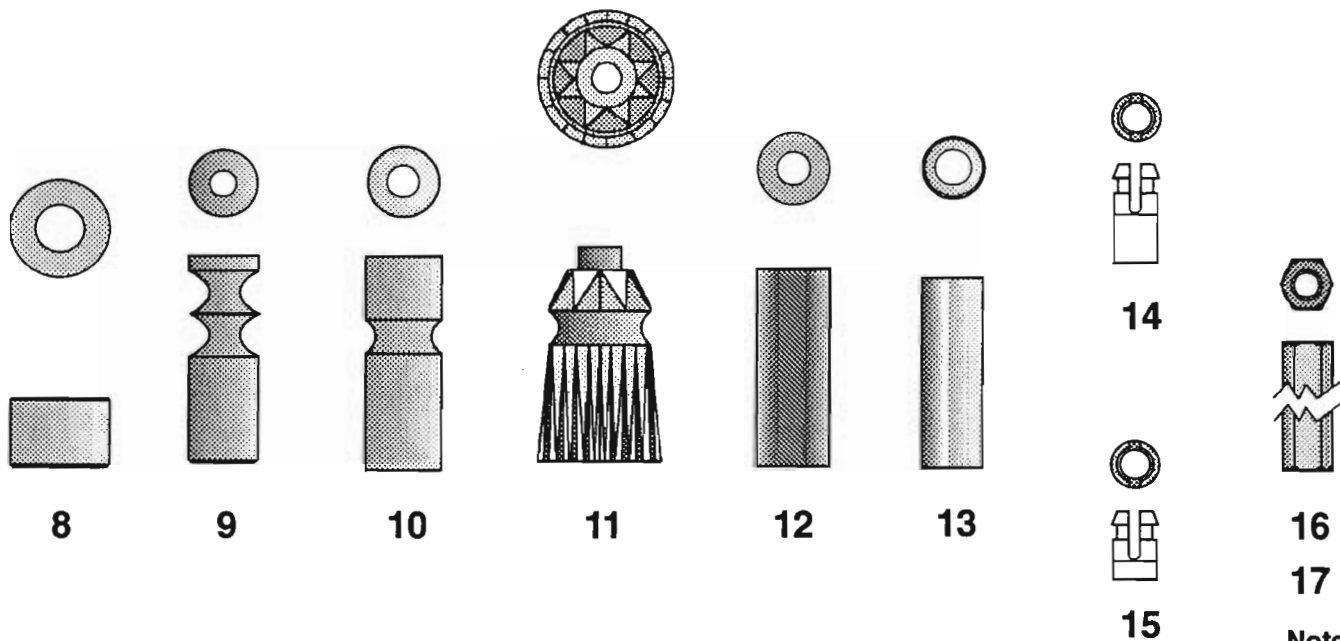
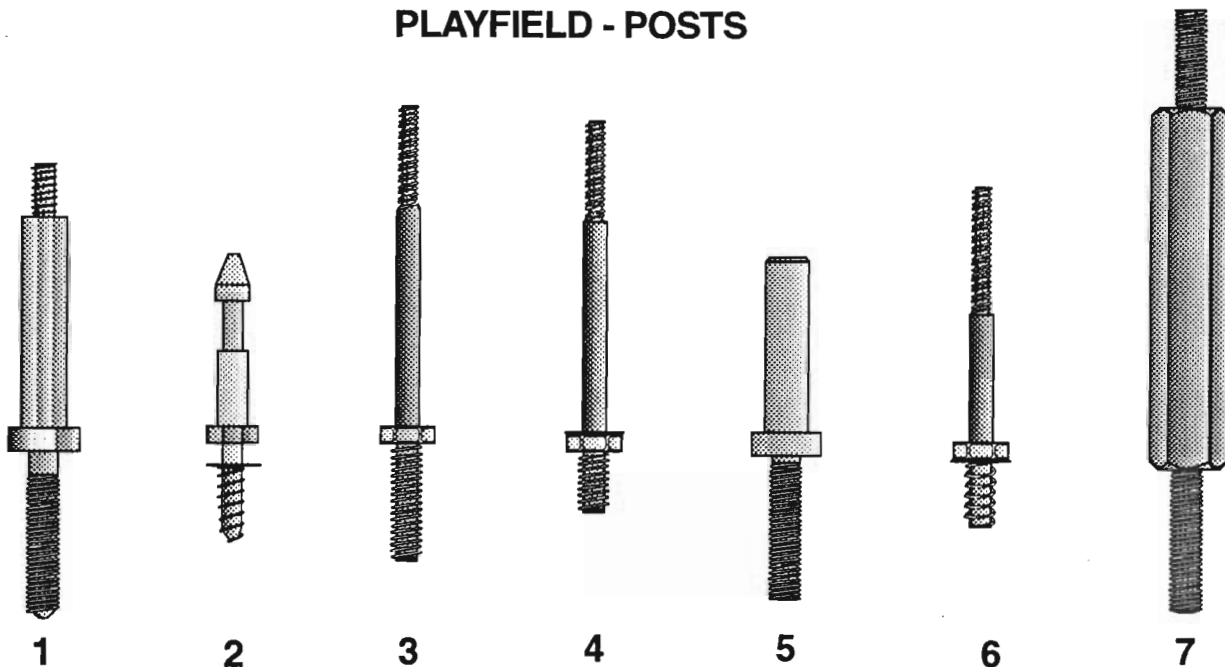


Item	Description	Qty.	Part No.	Item	Description	Qty.	Part No.
A	Rubber Bumper	8	545-5105-00	I	1" I.D. BLK RR	1	545-5348-05
B	Post Rubber (Sleeve Short)	10	545-5151-00	J	1-1/4" I.D. BLK RR	1	545-5348-06
C	Flipper Bushing (Small)	2	545-5192-00	K	1-1/2" I.D. BLK RR	2	545-5348-07
D	Sm. Flipper Rubber Ring (RR)	2	545-5207-00	L	2" I.D. BLK RR	3	545-5348-08
E	Lower Flipper RR	2	545-5277-00	M	2-1/2" I.D. BLK RR	5	545-5348-09
F	Post Rubber (Sleeve Tall)	4	545-5308-00	N	3/8" O.D. BLK RR	3	545-5348-19
G	3/16" I.D. BLK RR	8	545-5348-01	O	Bumper Post Rubber	2	545-5009-00
H	5/16" I.D. BLK RR	9	545-5348-02	†	2-3/4" I.D. BLK RR	0	545-5348-20
				†	1-3/4" I.D. BLK RR	0	545-5348-21

† Shaded Items Not Used.

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

PLAYFIELD - POSTS



Note
Different
Lengths

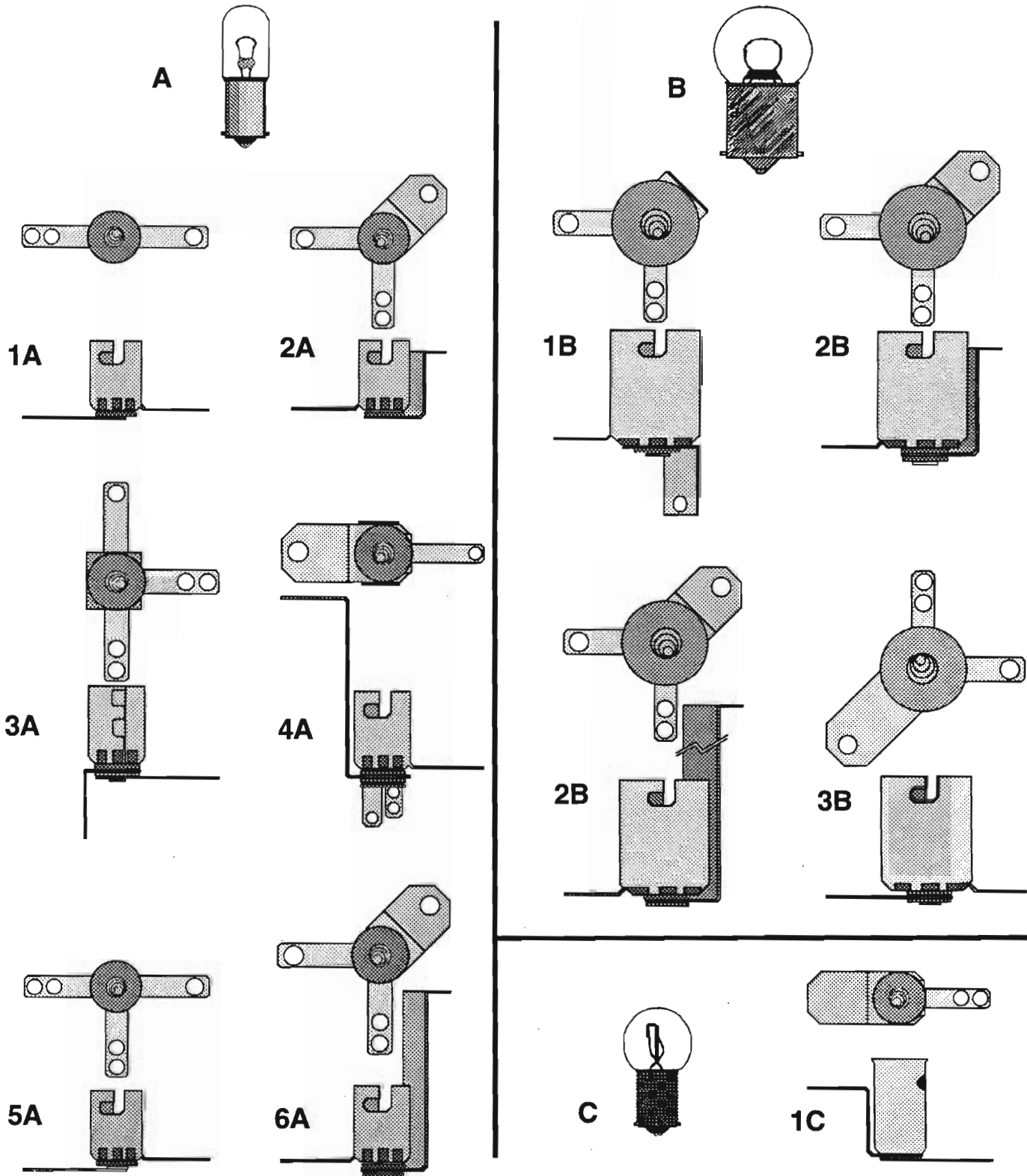
Item	Posts	Part No.	Qty.
1	BUMPER POST - MACHINE	530-5007-00	7
2	MINI-POST-WOOD THD	530-5004-00	3
3	MACHINE POST SCREW LRG	530-5008-00	3
4	POST MACHINE SCREW	530-5012-02	19
5	BUMPER POST	530-5057-00	1
6	POST MACHINE SCREW (SPEAKER HOUSING)	530-5263-01	5
7	MINI-PLAYFIELD SUPPORT	530-5285-00	3
8	SPACER B.B. HINGE	530-5099-00	2
9	STAND-OFF 2 GROOVES 1-1/16"	530-5102-01	0
10	PLASTIC POST (Grey)	550-5059-00	25

Item	Posts	Part No.	Qty.
11	SMALL POST PLASTIC (Red)	550-5034-02	17
12	SPACER 1" PLASTIC (Grey) 3/8"	254-5000-04	2
13	SPACER 1" LG METAL 5/16 X .144 ID	254-5001-00	5
14	SPACER 3/8" SLF RTN. SRS6- 6-01 PLASTIC (White)	254-5007-01	35
15	SPACER 1/4" SLF RTN. SRS6- 4-01 PLASTIC (White)	254-5007-02	8
16	SPACER 1/2" HEX TAPPED STL. 6-32	254-5008-02	4
17	SPACER 5/8" HEX TAPPED STL. 6-32	254-5008-03	4

LAMPS WITH SOCKETS

(Shaded items in table are not used in this game.)

Item	Description (1 bulb per socket)	Part No.	Qty.	Item	Description (1bulb per socket)	Part No.	Qty.
A	#44 Bulb	165-5000-44	91	B	#89 Bulb	165-5000-89	32
1A	2-Lug Staple Down Socket	077-5000-00	68	1B	Laydown Standard Socket	077-5100-00	11
2A	2-Lug Stand-Up Short Socket	077-5002-00	7	2B	Stand-Up, Short Socket	077-5101-00	18
3A	3-Lug Laydown Socket	077-5006-00	5	3B	Stand-Up, Long Socket	077-5102-00	3
4A	3-Lug Stand-Up Long Socket	077-5009-00	11	4B	Straight Leg Socket	077-5107-00	0
5A	3-Lug Staple Down Socket	077-5001-00	0	C	#455 Bulb (Twinkle)	165-5003-00	0
6A	2-Lug Stand-Up Long Socket	077-5005-00	0	1C	1-Lug Stand-Up Long Socket	077-5012-00	0



LAMPS WITH SOCKETS

(Shaded items in table are not used in this game.)

Item	Description (1 bulb per socket)	Part No.	Qty.
D	#555 Wedge Base Bulb *	165-5002-00	49
1D	555 Wedge Base Socket **	077-5007-00	35
2D	Laydown Wedge Base L/R BLK	077-5026-01	2
3D	Wedge Offset Bracket Socket	077-5029-00	5
4D	Laydown Wedge Base Black	077-5026-00	4
E	#906 Wedge Base Bulb	165-5004-00	0
1E	906 Wedge Base Socket	077-5016-00	0

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

Item	Lamp Board P.N.	Item	Lamp Board P.N.
A	520-5062-01	E***	520-5062-05
B	520-5062-02	F	520-5062-07
C	520-5062-03	G	520-5062-08
D	520-5062-04	H	520-5062-09

{Please Note: Board -06 Not Used.}

*** Item E located on Upper Playfield.



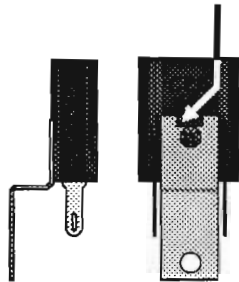
D

Note the notch in the bracket. (Used with Reflectors.)

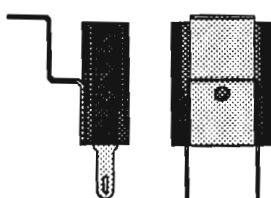
** This socket used only on Lamp Bds.



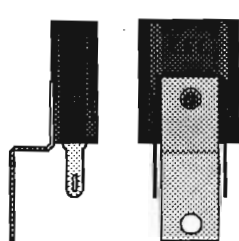
1D



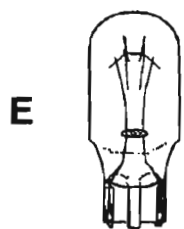
2D



3D



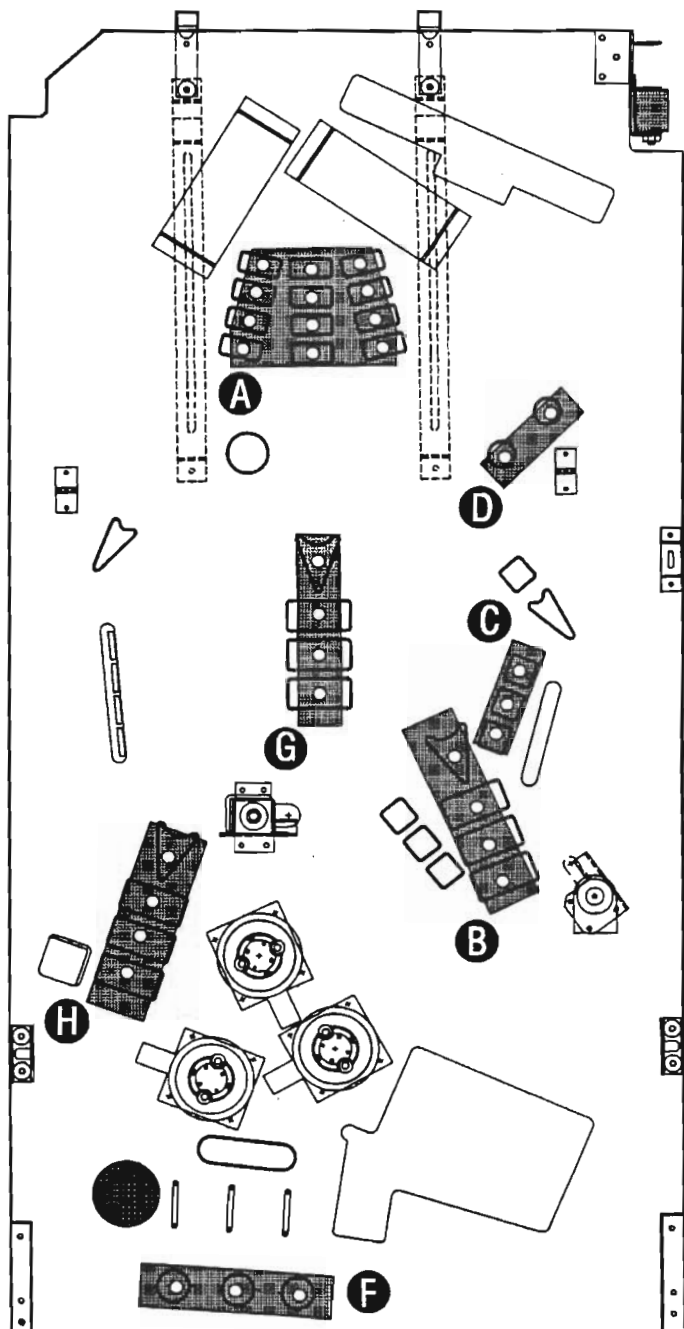
4D



E



1E

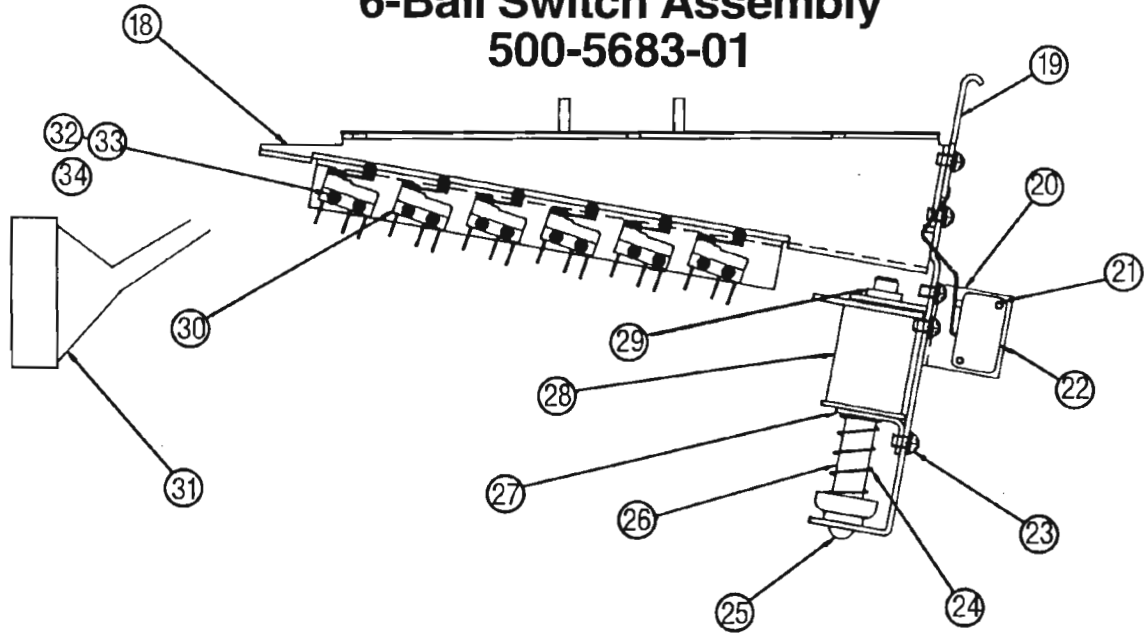


UNDER PLAYFIELD: BOTTOM VIEW

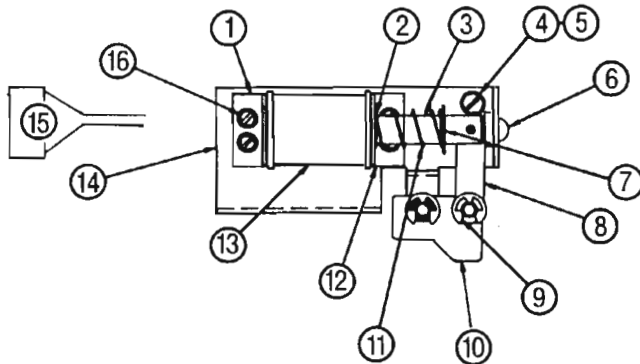
Part Order Notes

UNIQUE PARTS

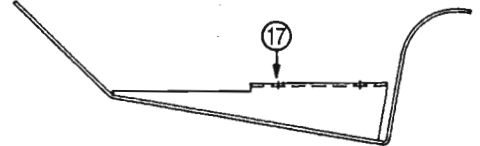
6-Ball Switch Assembly 500-5683-01



Lock Ball Assembly 500-5684-01

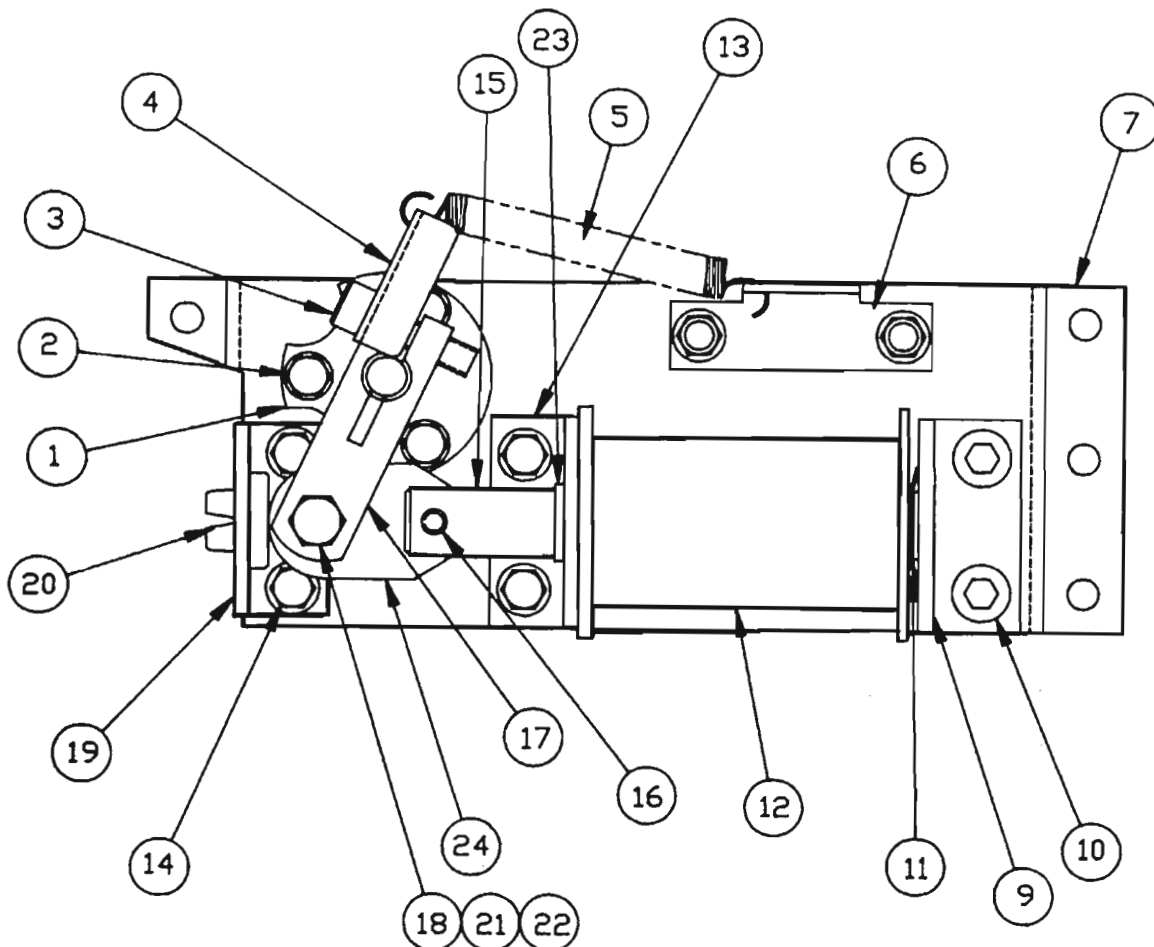


Deflector 535-6606-01



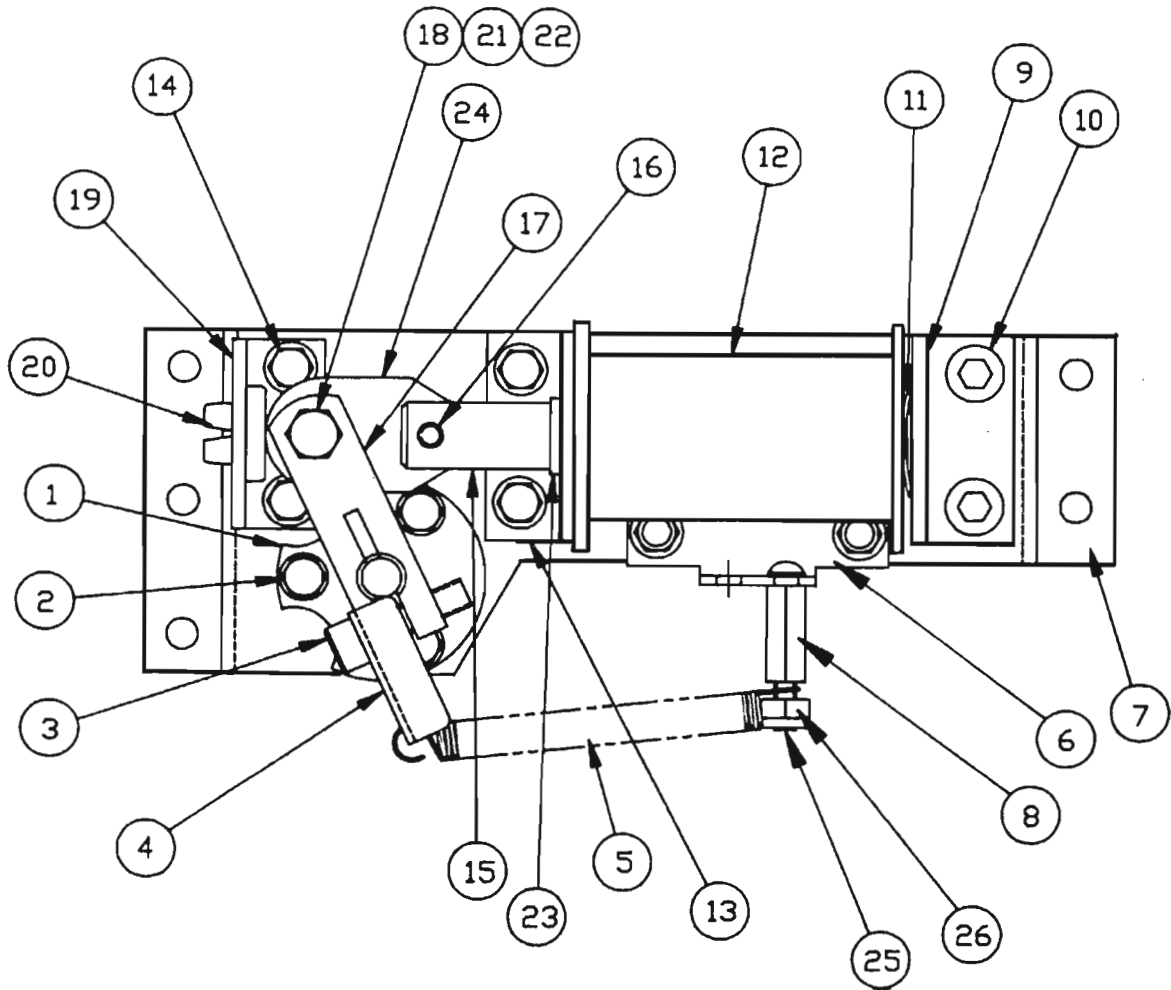
Item	Description	Part No.	Item	Description	Part No.
1	Core Stop Assembly	515-5088-00	18	Outhole Mounting Bracket	535-6621-01
2	Coil Sleeve	545-5411-00	19	Coil Mounting Bracket	535-6622-01
3	Plunger *7/16 X 2-1/4 LG	530-5250-01	20	Switch Mounting Bracket	535-6623-00
4	Spacer	545-5400-00	21	#4-40 PPH X .62 LG (2)	237-5806-00
5	#8-32 PPH X 1" LG	232-1104-16	22	Switch, Miniature	180-5118-00
6	Rubber Bumper	545-5105-00	23	#8-32 PPH w/SEM X.25 LG (8)	232-5300-00
7	E-Ring .44 Shaft	270-5005-00	24	Spring	266-5020-00
8	Link, Lock Ball	535-6649-00	25	Rubber Bumper	545-5105-00
9	E-Ring, .25 Shaft (2)	250-0008-00	26	Plunger Assembly	515-5000-02
10	Lock Ball Cam Assembly	515-5815-01	27	Coil Retaining Bracket	535-5203-01
11	Spring	266-5000-00	28	Coil, 23-800	090-5001-00
12	Coil Retaining Bracket	535-6658-00	29	Coil Sleeve	545-5076-00
13	Coil, 25-1240	090-5034-00	30	Switch, Subminiature (6)	180-5119-00
14	Lock Ball Bracket Assembly	515-5817-01	31	Wire Harness	036-5301-00
15	Wire Harness	036-5301-01	32	#2-56 PPH X .5 LG (12)	237-5806-00
16	#6-32 HWH TC X .38 LG (4)	237-5898-00	33	#2 Split LW (12)	244-5001-00
17	Deflector	535-6606-01	34	Switch Protector (6)	535-6539-00

Flipper Assembly Upper 500-5820-01 (Right)



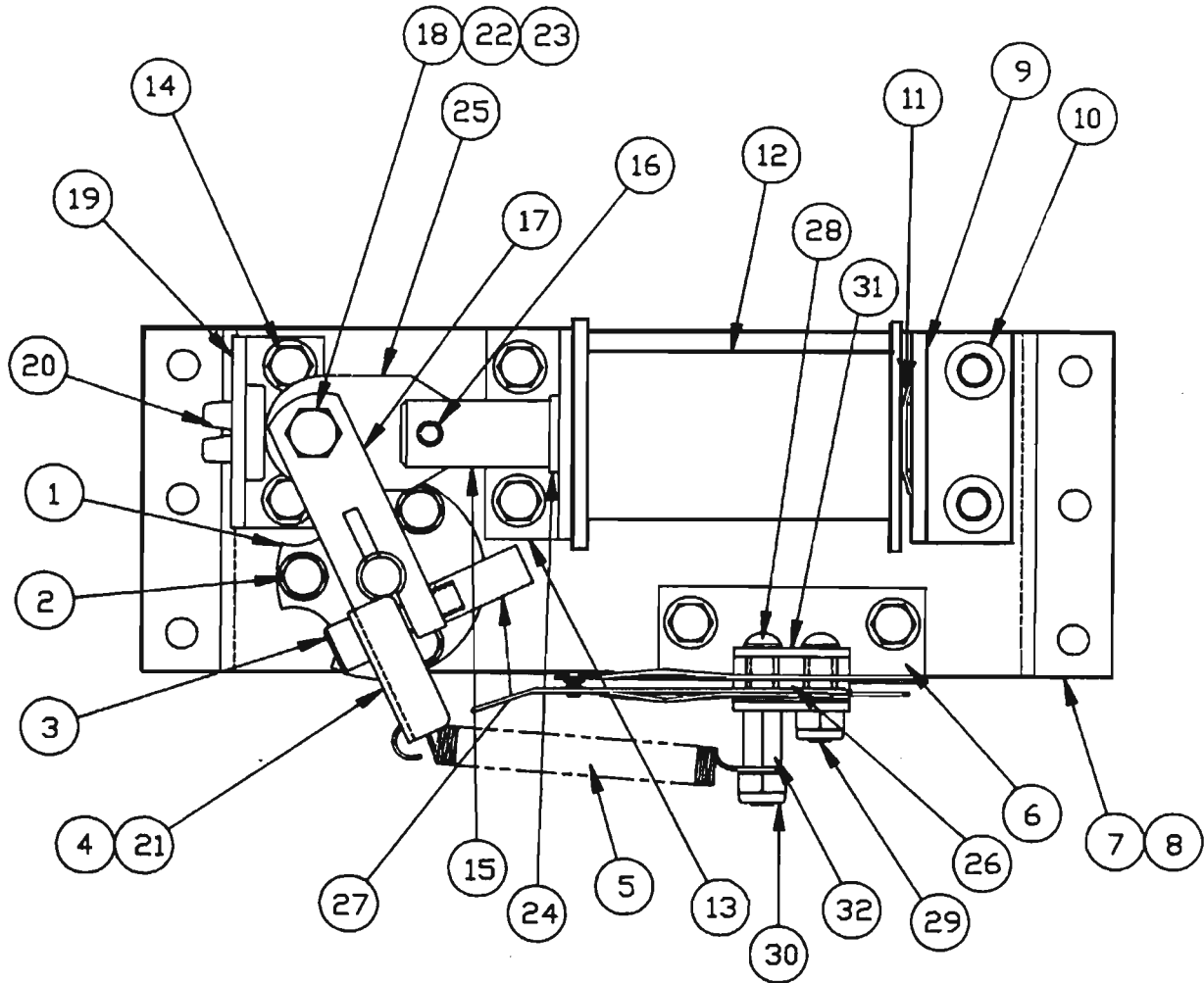
Item	Description	Part No.	Item	Description	Part No.
1	Flipper Bushing	545-5070-00	13	Front Bracket	535-6453-00
2	#5032 X .38 Lg HWH TF (3)	237-5910-00	14	#8-32 X .38 LG HWH TF (6)	237-5903-00
3	#10-32 SOC HD X .75 LG	237-5864-00	15	Plunger and Link Assembly	515-5822-00
4	Spring Bracket (Right)	535-6663-01	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 (Right/Mod.)	515-5077-11	19	Plunger Stop Bracket	535-5279-01
8	(Not Used)	-----	20	Nylon Stop	545-5445-00
9	Coil Stop Bracket	515-5346-00	21	Bushing	530-5139-00
10	1/4-20 SOC HD X .38 LG (2)	237-5861-00	22	#10-32 Elastic Stop Nut	240-5203-00
11	Spring Washer	269-5002-00	23	Coil Sleeve	545-5388-00
12	Coil 25-1800	090-5041-00	24	Flipper Link	545-5401-00

Flipper Assembly Upper 500-5820-02 (Left)

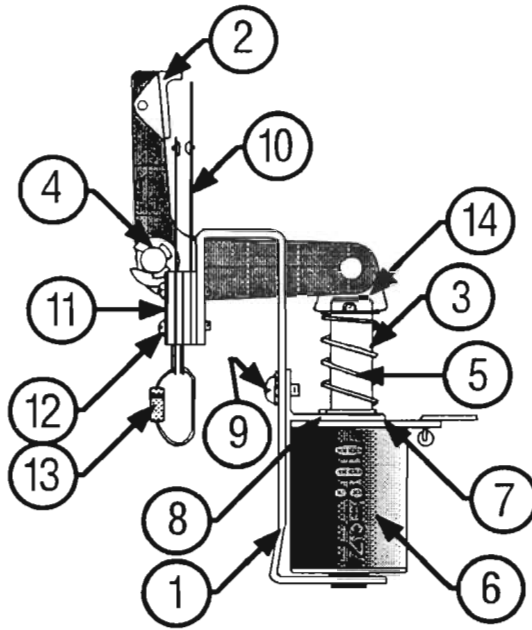


Item	Description	Part No.	Item	Description	Part No.
1	Flipper Bushing	545-5070-00	13	Front Bracket	535-6453-00
2	#5032 X .38 Lg HWH TF (3)	237-5910-00	14	#8-32 X .38 LG HWH TF (6)	237-5903-00
3	#10-32 SOC HD X .75 LG	237-5864-00	15	Plunger and Link Assembly	515-5822-00
4	Spring Bracket (Left)	535-6663-02	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/Mod.)	515-5077-12	19	Plunger Stop Bracket	535-5279-01
8	1/4 Hex Spacer (5/8" Long)	254-5008-02	20	Nylon Stop	545-5445-00
9	Coil Stop Bracket	515-5346-00	21	Bushing	530-5139-00
10	1/4-20 SOC HD X .38 LG (2)	237-5861-00	22	#10-32 Elastic Stop Nut	240-5203-00
11	Spring Washer	269-5002-00	23	Coil Sleeve	545-5388-00
12	Coil 25-1800	090-5041-00	24	Flipper Link	545-5401-00
			25	6-32 X 1 PPH	237-5506-00
			26	6-32 Nylok Nut	240-5005-00

Flipper Assembly, Lower 500-5755-01 (Right), 500-5755-02 (Left)

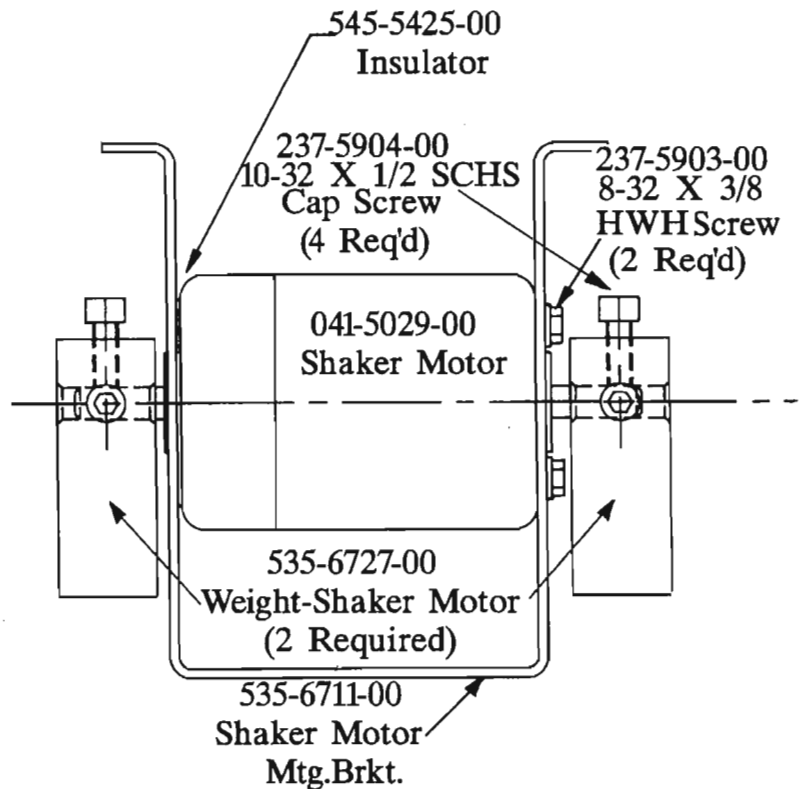


Item	Description	Part No.	Item	Description	Part No.
1	Flipper Bushing	545-5070-00	17	Pawl	530-5070-00
2	#6-32 X .38 LG HWH (3)	237-5910-00	18	#10-32 X .75 LG Shoulder Bolt	231-5019-00
3	#10-32 SOC HD X .75 LG	237-5864-00	19	Plunger Stop Bracket	535-5279-01
4	Spring Bracket (Left)	535-6663-02	20	Nylon Stop	545-5445-01
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	Coil Sleeve	545-5388-00
9	Coil Stop Bracket	515-5346-00	25	Flipper Link	545-5401-00
10	1/4-20 SOC HD X .38 LG (2)	237-5861-00	26	Power Switch	180-5124-01
11	Spring Washer	269-5002-00	27	Plastic Cap	545-5084-00
12	Coil 22-1080	090-5032-00	28	#6-32 X 1" LG PPH	237-5506-00
13	Front Bracket	535-6453-00	29	#6-32 X .63 LG PPH	237-5899-00
14	#8-32 X .38 LG HWH (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	1/4 Hex Spacer (3/8" Long)	254-5008-12

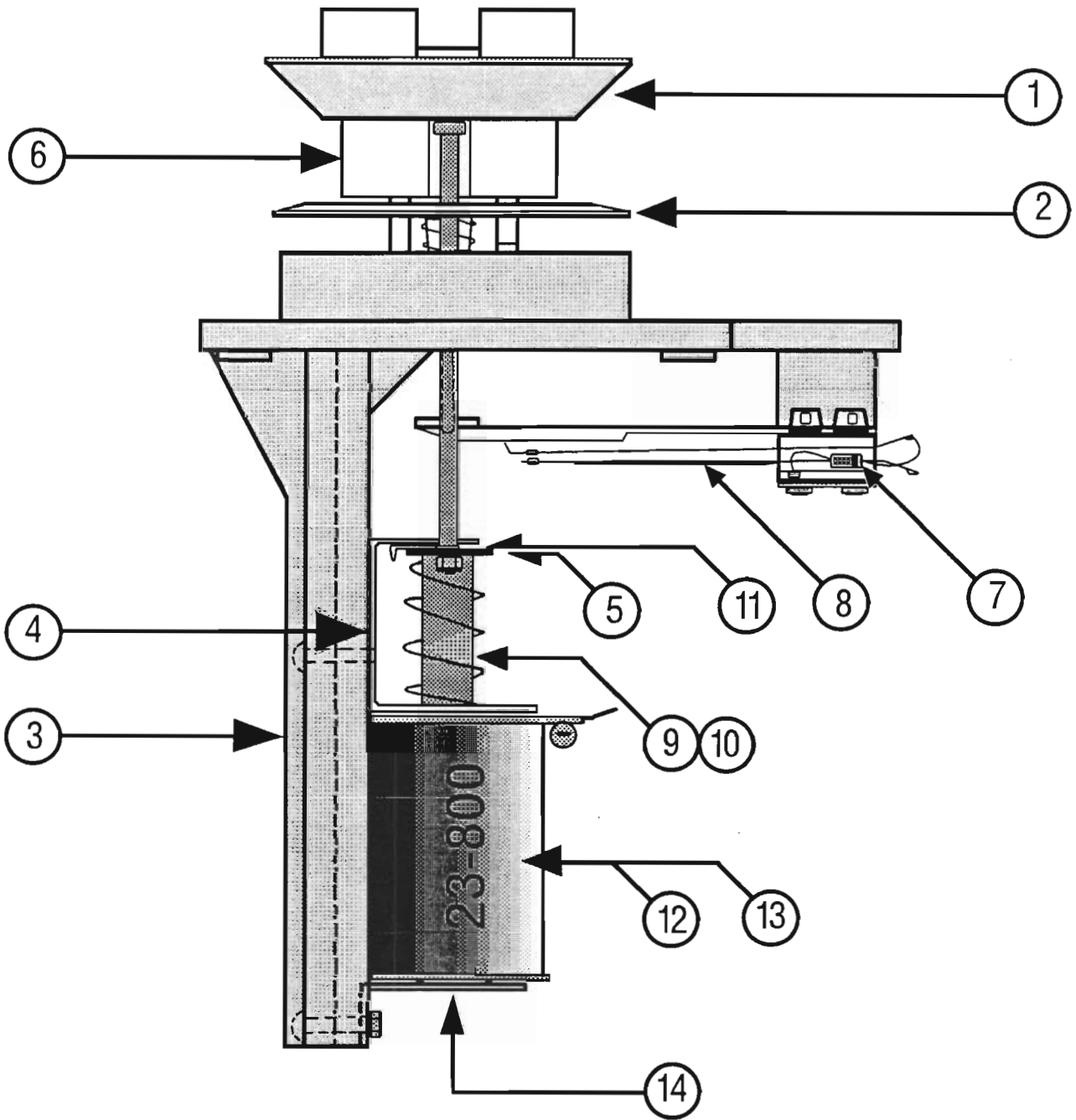


Item	Description	Part No.	Item	Description	Part No.
1	Slingshot Bracket	515-5339-00	8	Coil Retainer	535-5203-03
2	S. S. Arm & Tip Assembly	515-5340-00	9	#8-32 X 1/4" Screw (2)	232-5300-00
3	Plunger & Link Assembly	515-5338-00	10	Slingshot Switch (2)	180-5054-00
4	1/4 Retaining Ring (2)	270-5002-00	11	Tension Plate (2)	535-5846-00
5	Spring	266-5020-00	12	#4-40 X 1/2" Screw (4)	237-5837-00
6	Coil 23-800	090-5001-00	13	Diode 1N4004 (2)	112-5003-00
7	Coil Sleeve	260-0004-00	14	Link	545-5062-00

Shaker Motor
515-5893-00



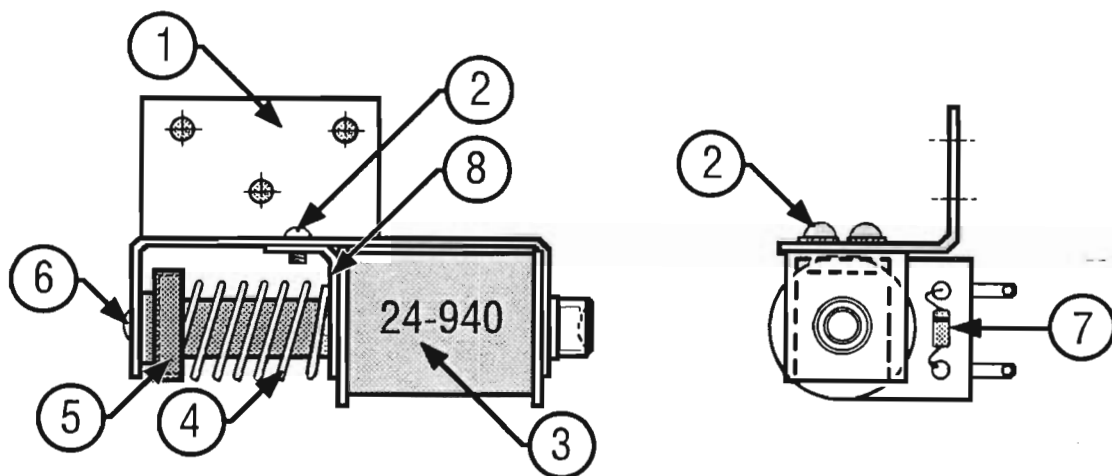
Turbo Bumper Assembly 500-5227-00†



Item	Description	Part No.	Item	Description	Part No.
1	Rod & Ring Assembly	515-5085-00	8	Switch	180-5015-01
2	Bumper Skirt	545-5098-00	9	Plunger	530-5062-00
3	Bumper Housing	545-5100-00	10	Spring	266-5009-00
4	Plunger Bracket	535-5277-00	11	Metal Yoke	535-5877-00
5	Fiber Yoke	545-5120-00	12	Coil 23-800	090-5001-00
6	Bumper Body	545-5197-00	13	Coil Sleeve	260-0004-00
7	Diode 1N4004	112-5003-00	14	Coil Stop Assembly	515-5088-00

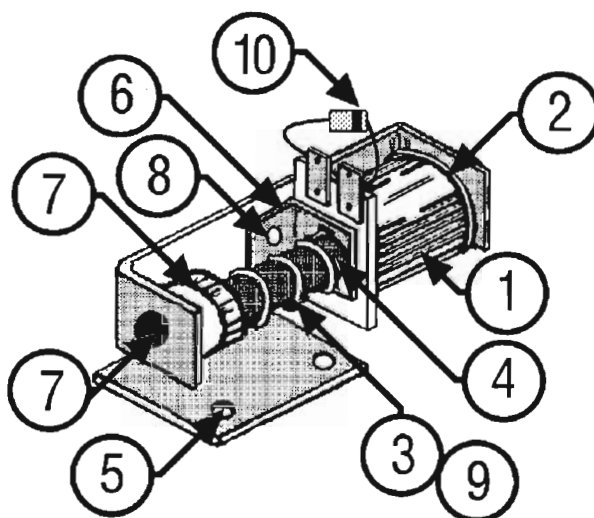
† Bumper Cover (not shown) is not included with above assembly. Bumper Cover (Red), 550-5057-02, Qty. 2, must be ordered separately.

Ball Kicker (Auto Launch) Assembly 500-5477-02



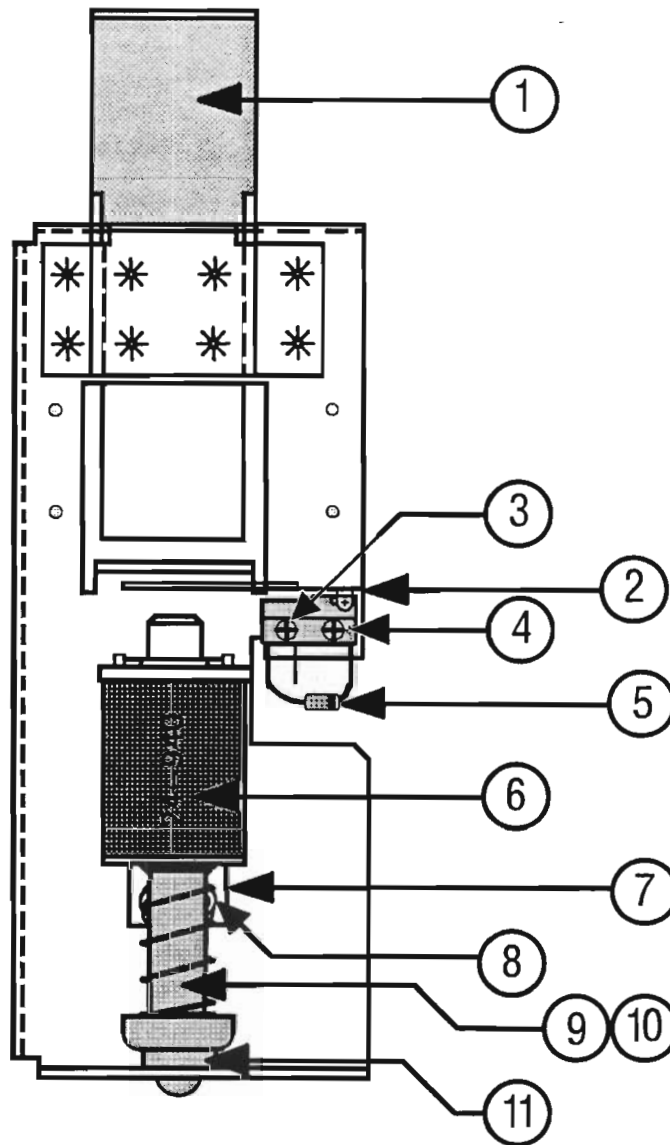
Item	Description	Part No.	Item	Description	Part No.
1	Coil Mounting Bracket	535-6385-00	5	Plunger Assembly	515-5941-01
2	8-32 X 1/4 SEMS (2)	232-5300-00	6	Grommet (Bumper Pad)	545-5105-00
3	Coil 24-940	090-5036-01	7	Diode 1N4004	112-5003-00
4	Spring	266-5020-00	8	Coil Retaining Bracket	535-5203-00

Knocker Assembly 500-5081-00



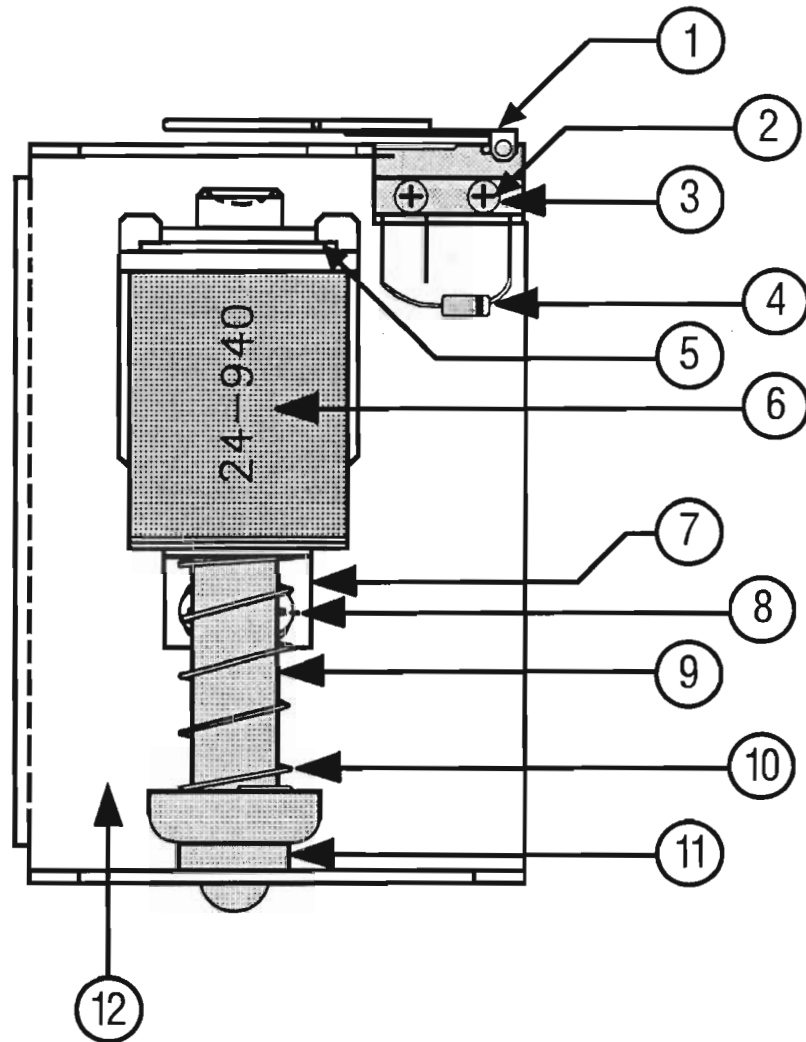
Item	Description	Part No.	Item	Description	Part No.
1	Coil 23-800	090-5001-01	6	Coil Retainer Bracket	535-5203-01
2	Coil Sleeve	545-5076-00	7	Bumper Pad	545-5105-00
3	Spring	266-5020-00	8	Screw #8-32 X 1/4 SEMS (2)	232-5300-00
4	Spring Washer	269-5002-00	9	Plunger Assembly	515-5941-01
5	Kickback/Knocker Bracket	535-5265-00	10	Diode 1N4004	112-5003-00

Super Vertical Up-Kicker (VUK) (For Left & Middle Scoops) 500-5767-01



Item	Description	Part No.	Item	Description	Part No.
1	Weld Assembly	515-5940-00	6	Coil 24-940	090-5036-00
2	Switch	180-5116-00	7	Bracket	535-5203-01
3	Screw (2)	237-5806-00	8	Screw (2)	232-5300-00
	Washer (2)	244-5001-00	9	Spring	266-5020-00
4	Protector	535-6539-00	10	Plunger	515-5941-01
5	Diode 1N4001	112-5001-00	11	Bumper Pad	545-5105-00

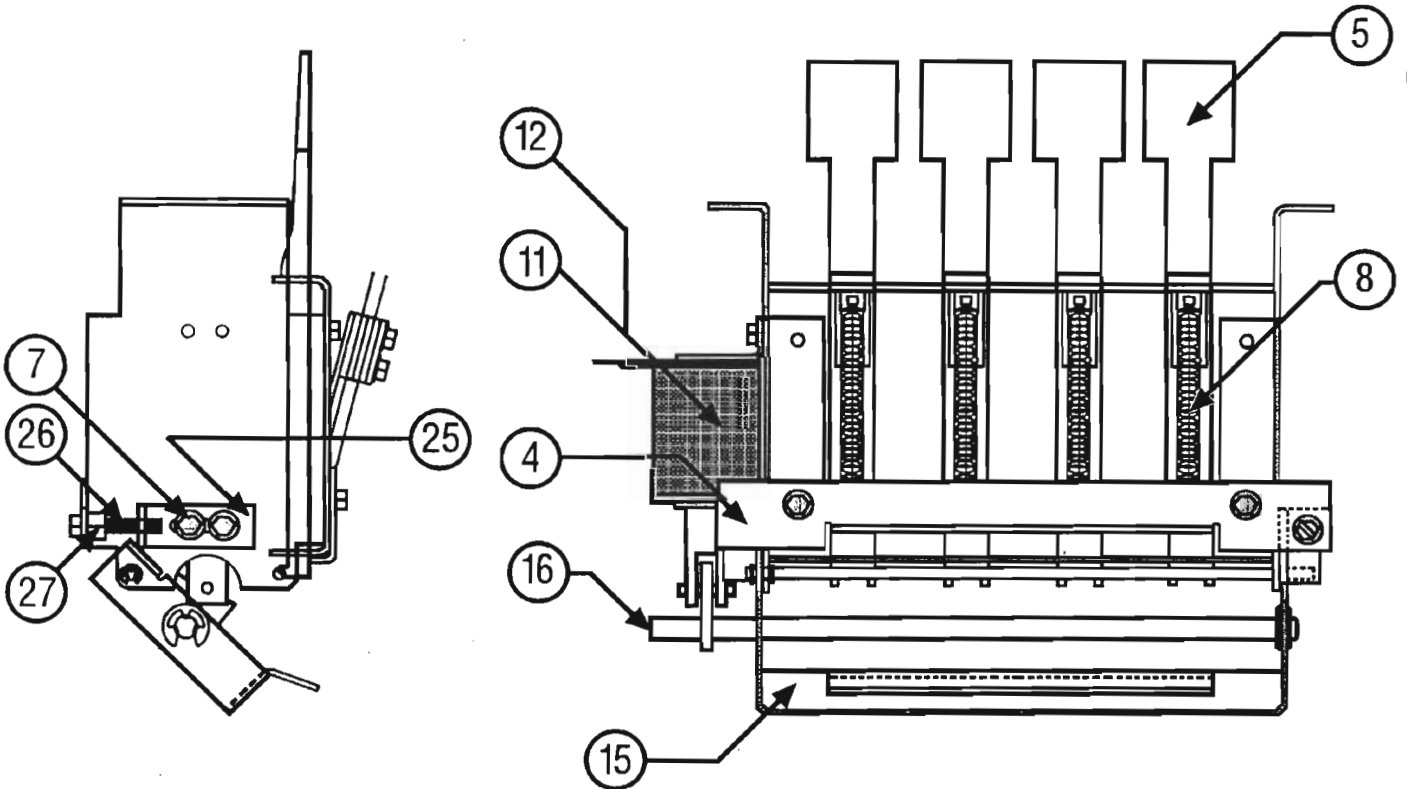
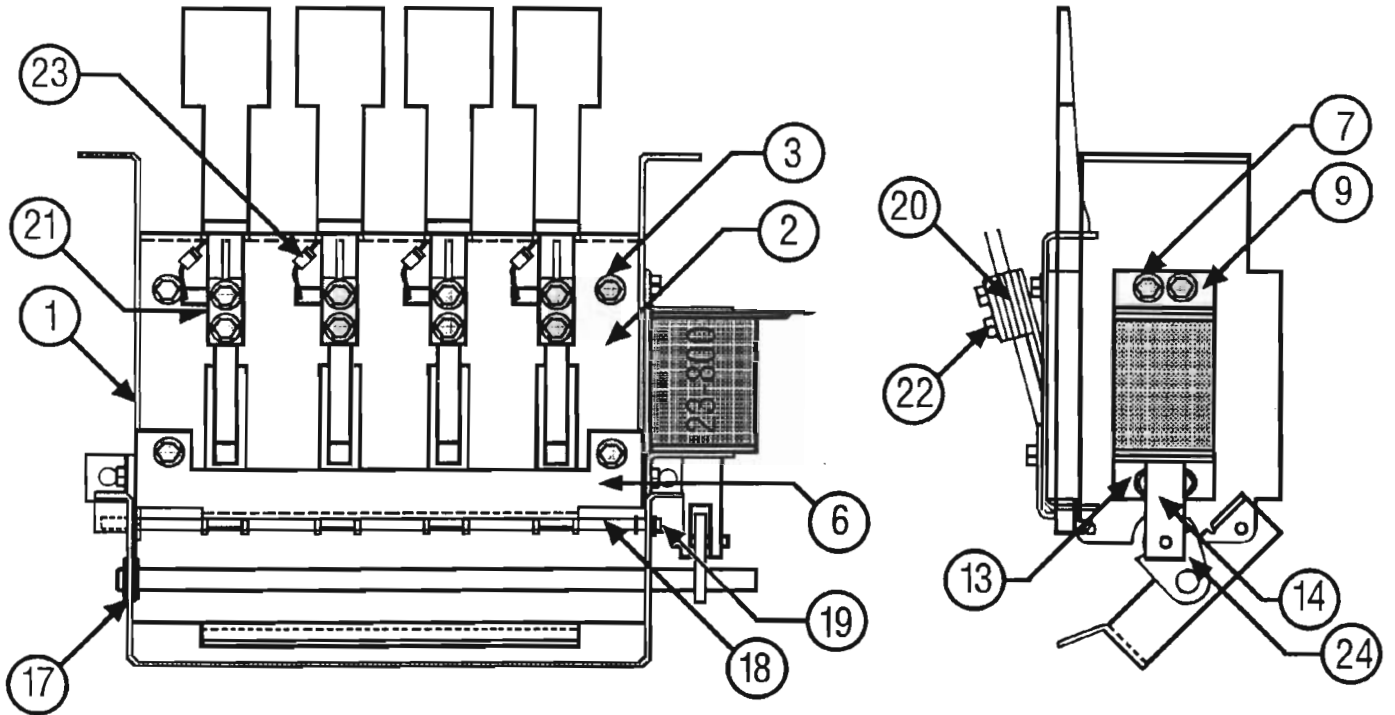
VUK (Right Side into Wire Ramp) 500-5690-01



Item	Description	Part No.	Item	Description	Part No.
1	Switch	180-5116-00	7	Bracket	535-5203-01
2	Screw (2)	237-5806-00	8	Screw (2)	232-5300-00
	Washer (2)	244-5001-00	9	Plunger	515-5941-01
3	Protector	535-6539-00	10	Spring	266-5020-00
4	Diode 1N4001	112-5001-00	11	Bumper Pad	545-5105-00
5	Insulation	545-5431-00	12	Bracket	535-6607-01
6	Coil 24-940	090-5036-00			

Drop Target 3 & 4-Bank Assembly

500-5799-03 & 500-5799-04



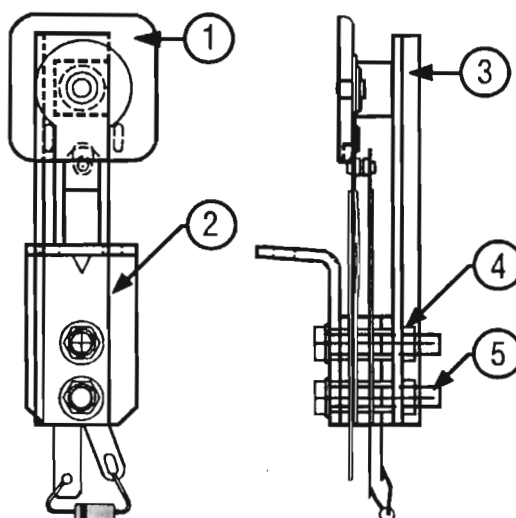
(See Next Page for Table & Notes)

Drop Target (D.T.) 3-Bank Assembly 500-5799-03 † & D.T. 4-Bank Assembly 500-5799-04 †

Item	Description	Part No.	Item	Description	Part No.
1	Target End Plate (2)	535-6162-00	13	Plunger Stop Bracket	515-5338-00
2	Target Frame for 4-Bank	535-6159-04	14	Plunger/Link Assembly	515-5338-00
2	Target Frame for 3-Bank	535-6159-03	15	Target Lift Bracket for 4-Bank	535-6509-04
2	Target Frame for 2-Bank	535-6159-02	15	Target Lift Bracket for 3-Bank	535-6509-03
3	8-32 X 3/8 (6)	237-5879-00	15	Target Lift Bracket for 2-Bank	535-6509-02
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
4	Spring Mount. Plate for 2-Bank	535-6510-02	16	Target Shaft for 2-Bank	530-5179-02
5	Target (Specify Game)	545-5048-01	17	E-Ring (1/4")	270-5002-00
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
6	Trgt. Retaining Brkt. for 2-Bank	535-5042-02	18	Pivot Shaft for 2-Bank	530-5180-02
7	6-32 X 3/8 SHWHTCS Type 23 (6)	237-5891-00	19	E-Ring (1/8")	270-5000-00
8	Target Reset Spring	265-5003-00	20	Switch Assembly	180-5092-01
9	Coil Support Bracket	535-6154-00	21	Switch Plate	535-5045-00
10	-----	-----	22	6-32 X 1/2 (i. # ?)	237-5878-00
11	23-700 Coil for 4-Bank	090-5022-00	23	Diode 1N4004	112-5003-00
11	23-800 Coil for 3-Bank	090-5001-02	24	Plunger Link	545-5293-00
11	23-800 Coil for 2-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	8-32 Nyloc	240-5102-00

† - Note: Table above shows common parts and unique parts for the 2, 3 & 4 Bank Drop Target Assemblies. The shaded areas (2-Bank D.T.) 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 number (see inside cover) for proper decals.

Stand-Up Target Assembly (1" Square) 500-5232-03 (Amber), 500-5232-06 (Yellow)

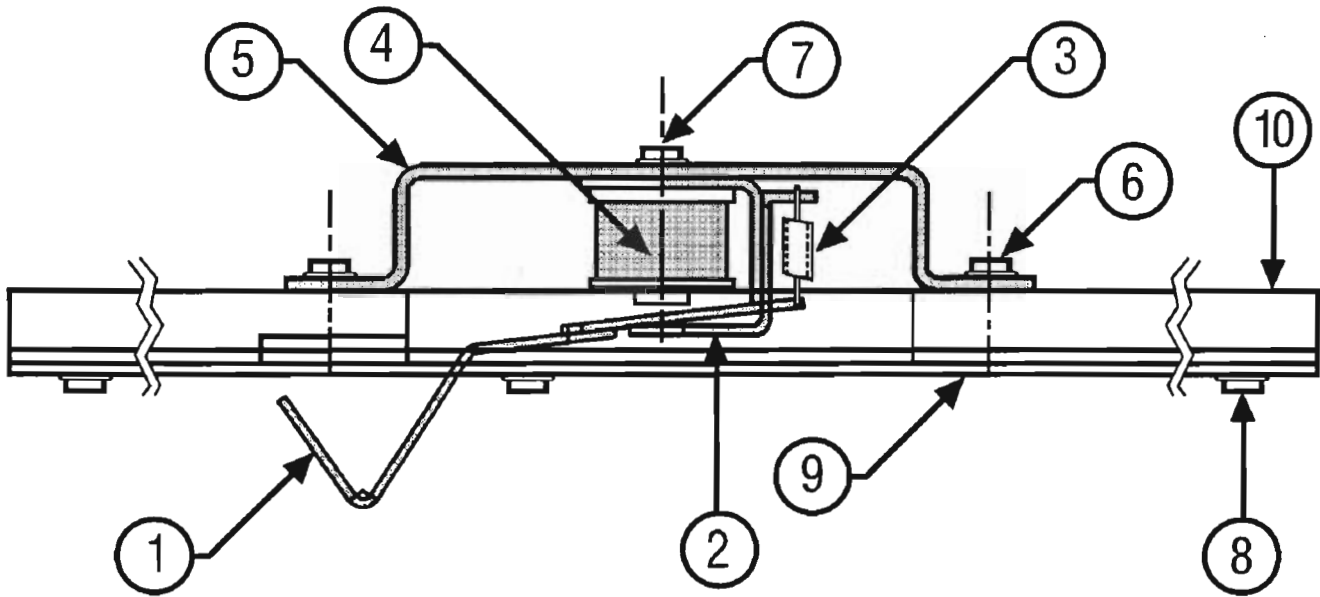


Target Color 500-5232-XX	
Clear	-01
Red	-02
Amber	-03
Green	-04
Blue	-05
Yellow	-06
Orange	-07
White	-08
Purple	-09

Item	Description	Part No.	Item	Description	Part No.
1	Switch & Target Ass'y	515-5470-XX	4	6-32 Nyloc	240-5010-00
2	Mounting Bracket	535-6896-00	5	6-32 X 3/4 HWH MS	237-5893-00
3	Back Plate	535-5116-00			

Note: When ordering, the "-XX" should be replaced by color coded number above.

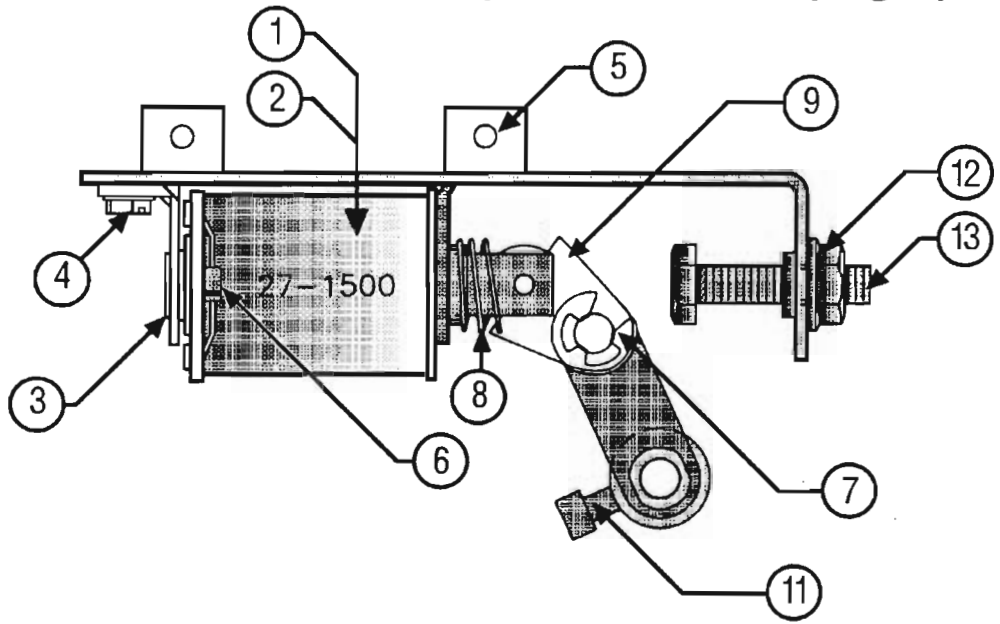
Backpanel Assembly
500-5817-00
with
Backpanel Diverter Assembly
515-6019-00†



Item	Description	Part No.	Item	Description	Part No.
1	Diverter Brkt./Armature Asm.	515-6018-00	6	#8 X 1/2 Hex-W AB ZN	234-5101-00
2	Diverter Coil/Brkt. Assy.	515-6019-00	7	#8-32 x 3/8 HWH Screw	237-5903-00
3	Spring 15oz.	265-5022-02	8	#6 X 3/8 Hex-W AB ZN	234-5000-00
4	Coil 32-1800	090-5031-02	9	Backpanel Butyrate	830-5452-05
5	Mounting Bracket	535-6956-00	10	Backpanel	525-5341-00

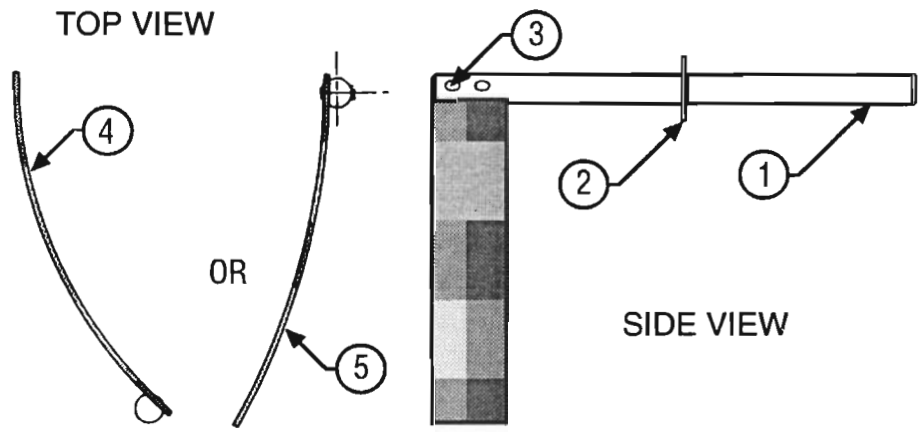
† For Diverter Assembly only, without #5 Mounting Bracket, order 515-6019-00. For Diverter Assembly with Item #5, Mounting Bracket, order 515-6020-00.

Diverter Assemblies (on Upper Playfield) 500-5770-00 (Left), 500-5770-01 (Right)



Item	Description	Part No.	Item	Description	Part No.
1	Coil 27-1500	090-5004-01	7	E-Ring (1/4)	270-5002-00
2	Coil Sleeve	545-5031-00	8	Spring	266-5034-00
3	Coil Stop	515-5088-00	9	Plunger Assembly	515-5338-00
4	#8-32 Hex TF (2)	237-5903-00	10	Cap Screw	237-5897-00
5	Bracket for Left Diverter	535-6821-00	11	Crank Arm	515-5396-00
5	Bracket for Right Diverter	535-6821-01	12	1/4-20 Nut	240-5300-00
6	Diode 1N4004	112-5003-00	13	1/4-20 Bolt	231-5026-00

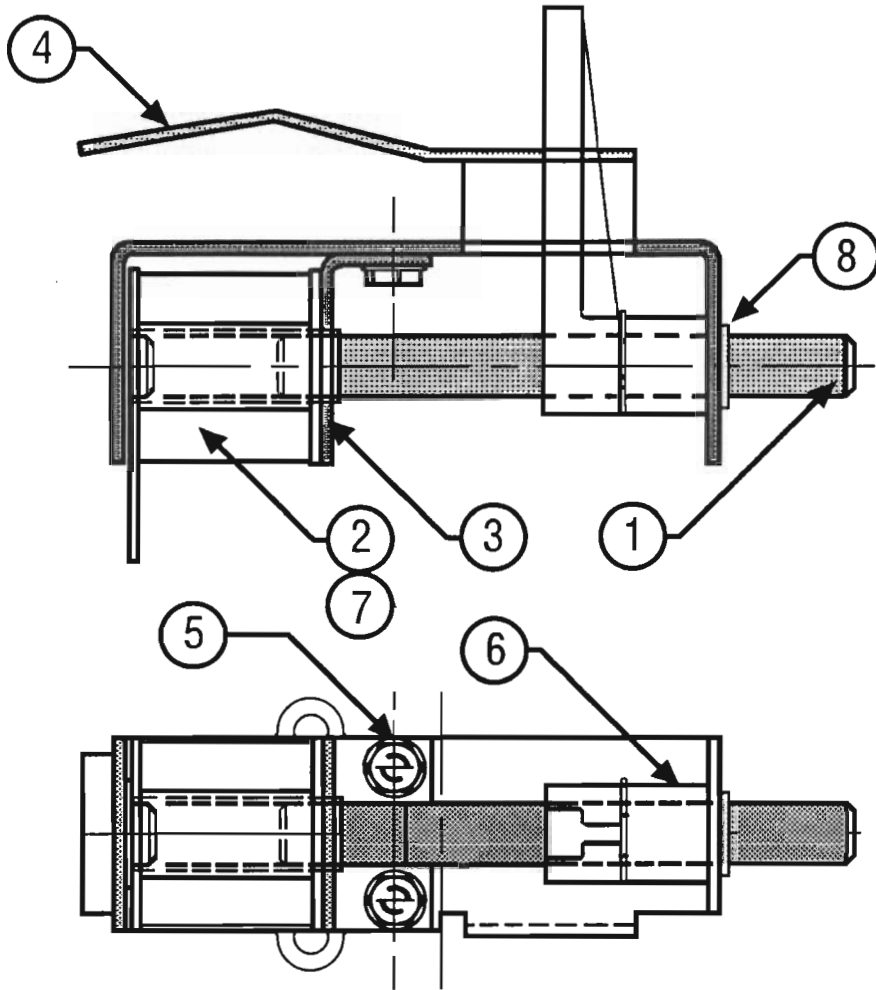
Diverter Paddles & Shaft Assemblies 515-6023-00 (Left), 515-6024-00 (Right)†



Item	Description	Part No.	Item	Description	Part No.
1	Shaft	530-5288-00	4	Diverter Paddle for Left	535-6889-00
2	E-Ring (1/4)	270-5002-00	5	Diverter Paddle for Right	535-6888-00
3	∅0.125 Rivet X .312 L (2 Req'd)	249-5011-00			

† - Used only on the Diverter Assembly 500-5770-00 (Left) and 500-5770-01 (Right) Respectively.

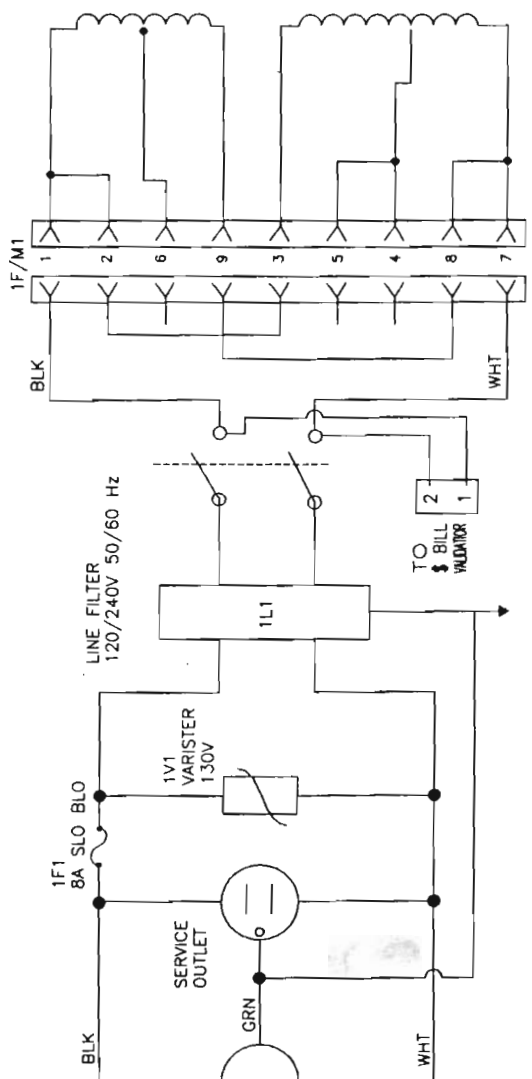
Kicker, Eject Assembly 500-5758-00



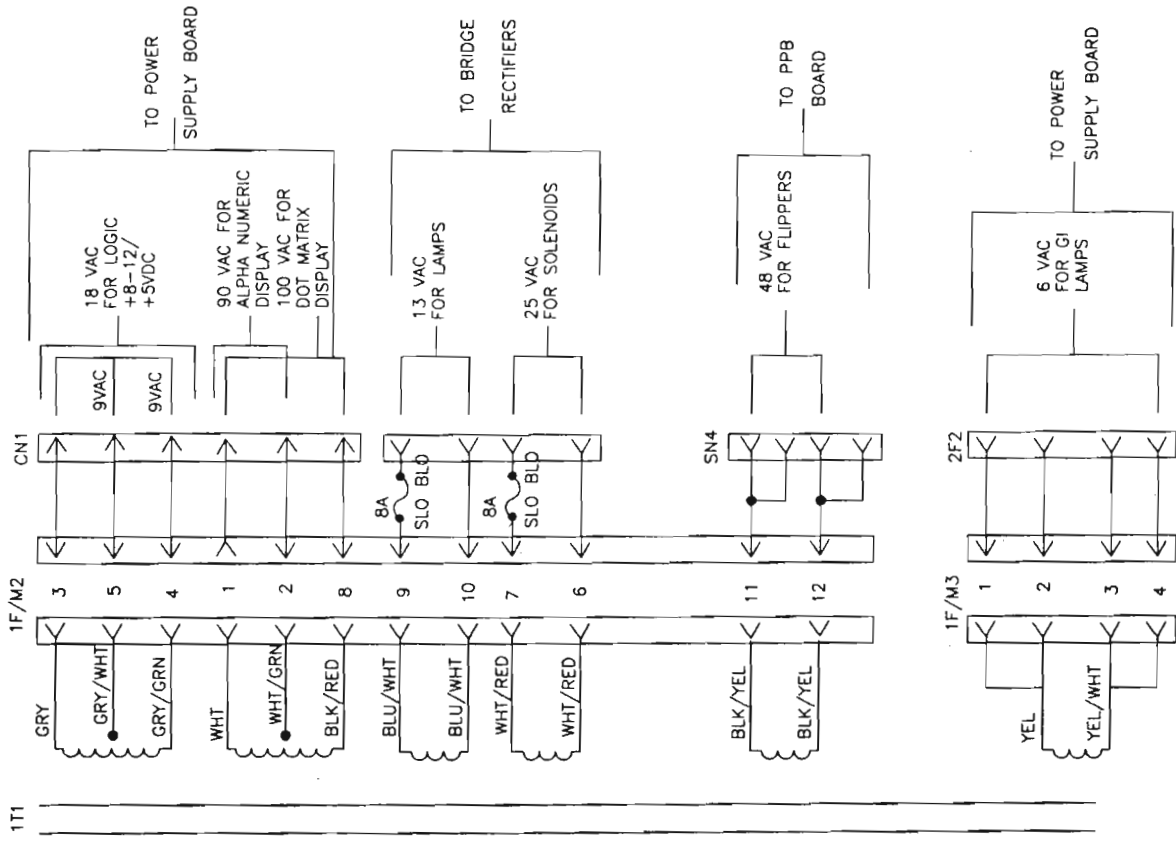
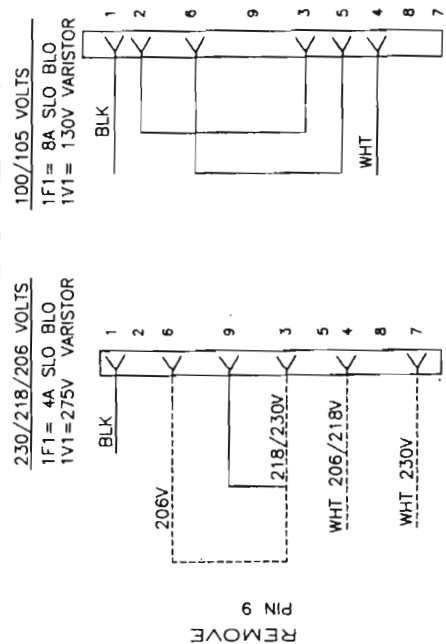
Item	Description	Part No.	Item	Description	Part No.
1	Kicker/Plunger Assembly	515-5927-00	5	#8-32 X 3/8 Hex TF (2)	237-5903-00
2	Coil	090-5046-00	6	Ruber Bumper	545-5151-00
3	Coil Bracket	535-6784-00	7	Coil Sleeve Small Bobin	545-5442-00
4	Mounting Brkt. Sub. Ass'y	515-5926-00	8	Nyliner Thomson 5L1-FF (1)	545-5485-00

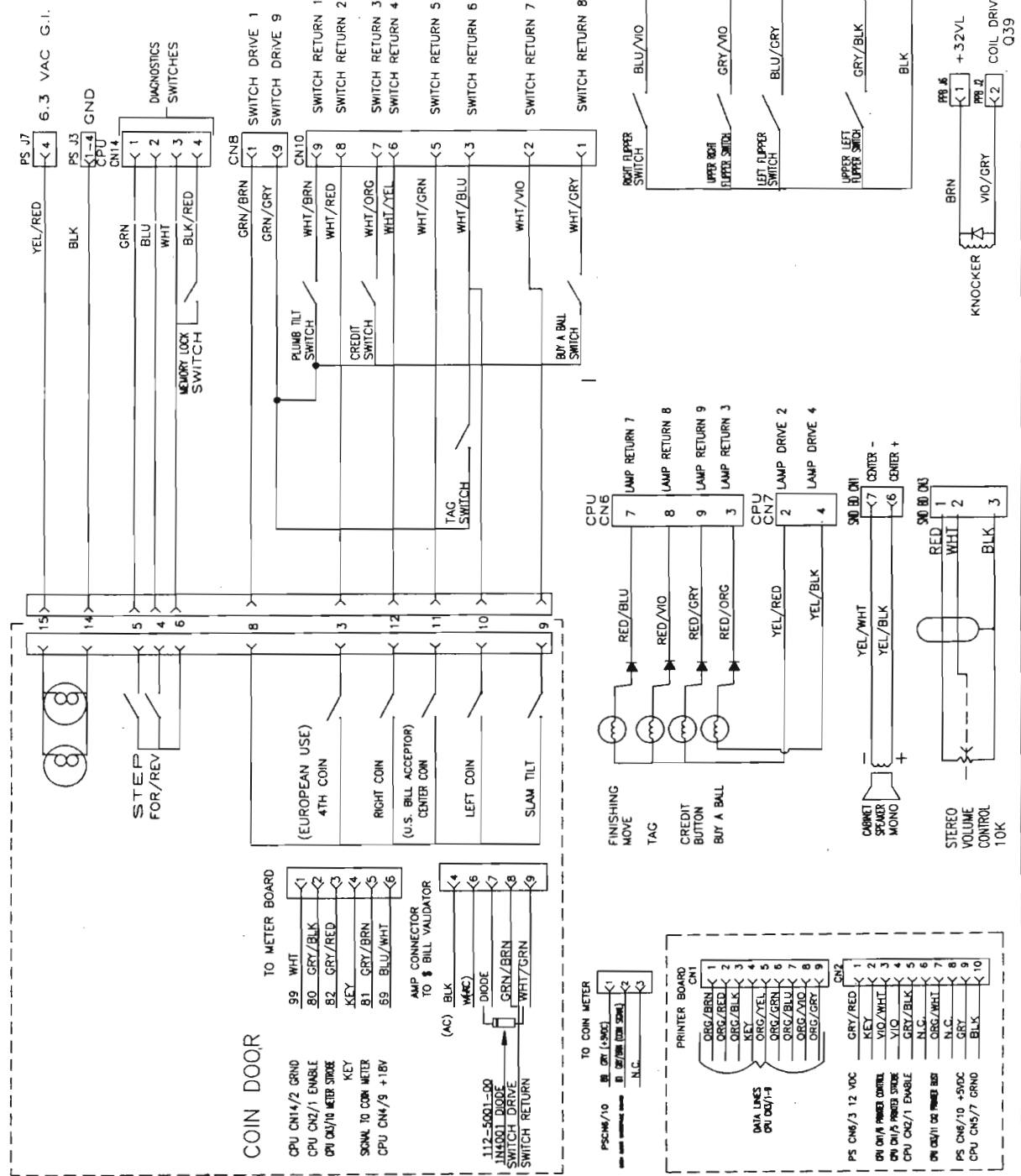
THIS CONFIGURATION FOR 115V

FOR LOWER LINE VOLTAGES
OR 220 VOLT OPERATION
SEE SAMPLES BELOW



JUMPER FOR VOLTAGE VARIATION





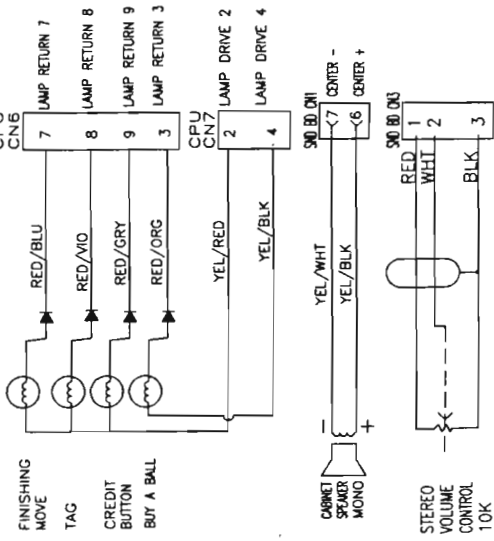
COIN DOOR

- CPU CN14/2 GRND
- CPU CN2/1 ENABLE
- CPU CN3/10 METER STRIKE
- KEY
- SCALM TO COIN METER
- CPU CN4/9 +18V

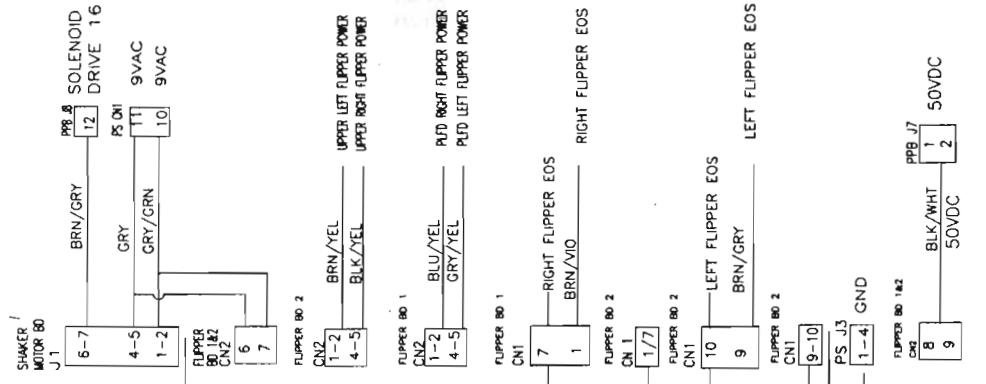
- TO METER BOARD
- 59 WHIT
 - 80 GRN/BLK
 - 82 GRN/RED
 - KEY
 - 81 GRN/BRN
 - 59 BLU/WHIT
- AMP CONNECTOR TO \$ BILL VALIDATOR
- (AC) BLK
 - WHT
 - DIODE
 - GRN/BRN
 - WHT/GRN

- TO COIN METER
- PS CM6/10 5VDC
 - PS CM7/10 5VDC
 - N.C.

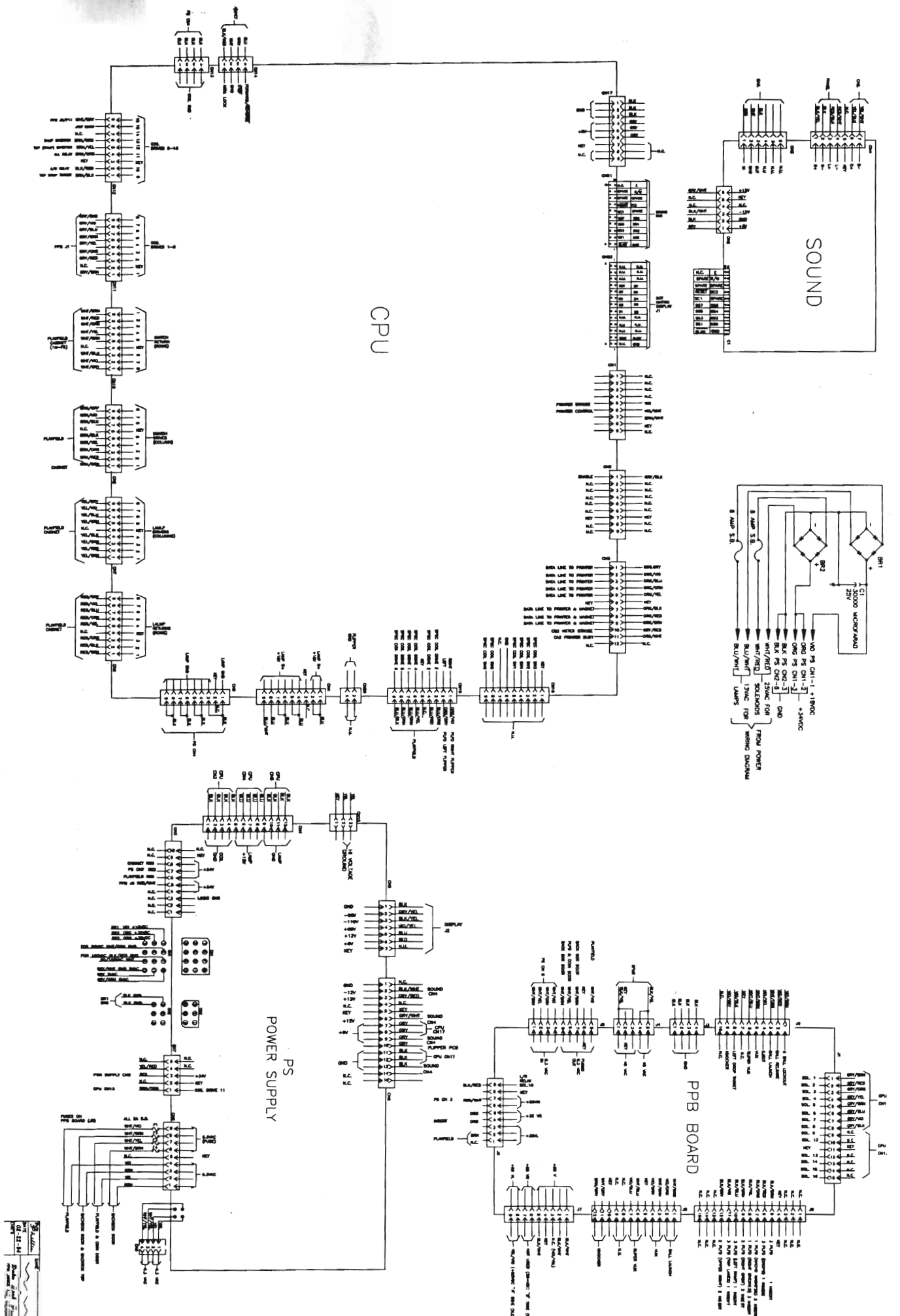
- PRINTER BOARD
- CN1
- ORG/BRN
 - ORG/RED
 - ORG/BLK
 - KEY
 - ORG/YEL
 - ORG/GRN
 - ORG/BLU
 - ORG/AVO
 - ORG/GRY
- CN2
- GRY/RED
 - KEY
 - VIO/WHIT
 - VIO
 - GRY/BLK
 - N.C.
 - ORG/WHIT
 - N.C.
 - GRY
 - BLK



FLIPPER BOARD



Backbox Wiring Diagram



1. All wiring should be done in accordance with the National Electrical Code (NEC) and local codes.

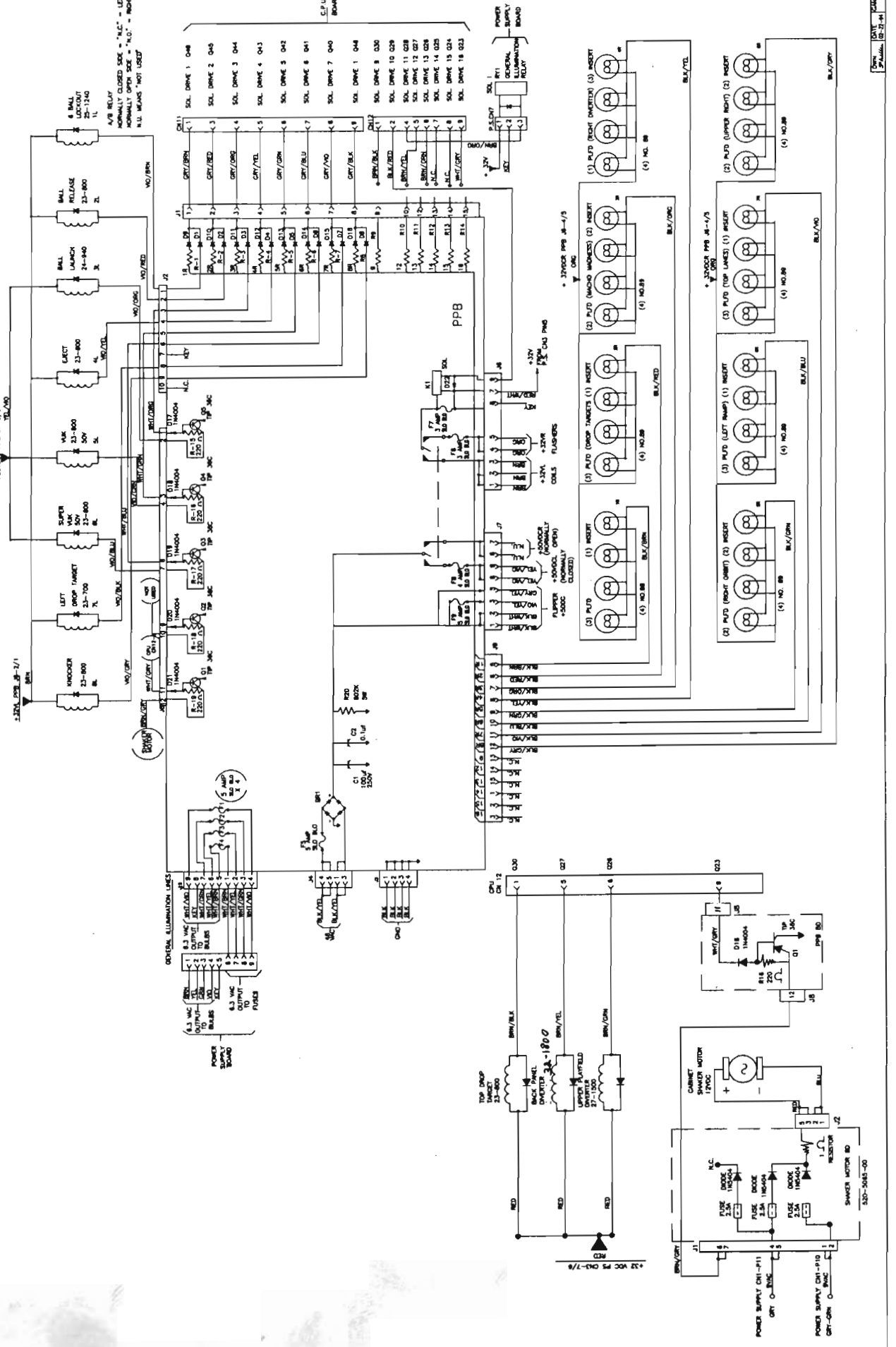
 2. All wiring should be done in accordance with the manufacturer's instructions.

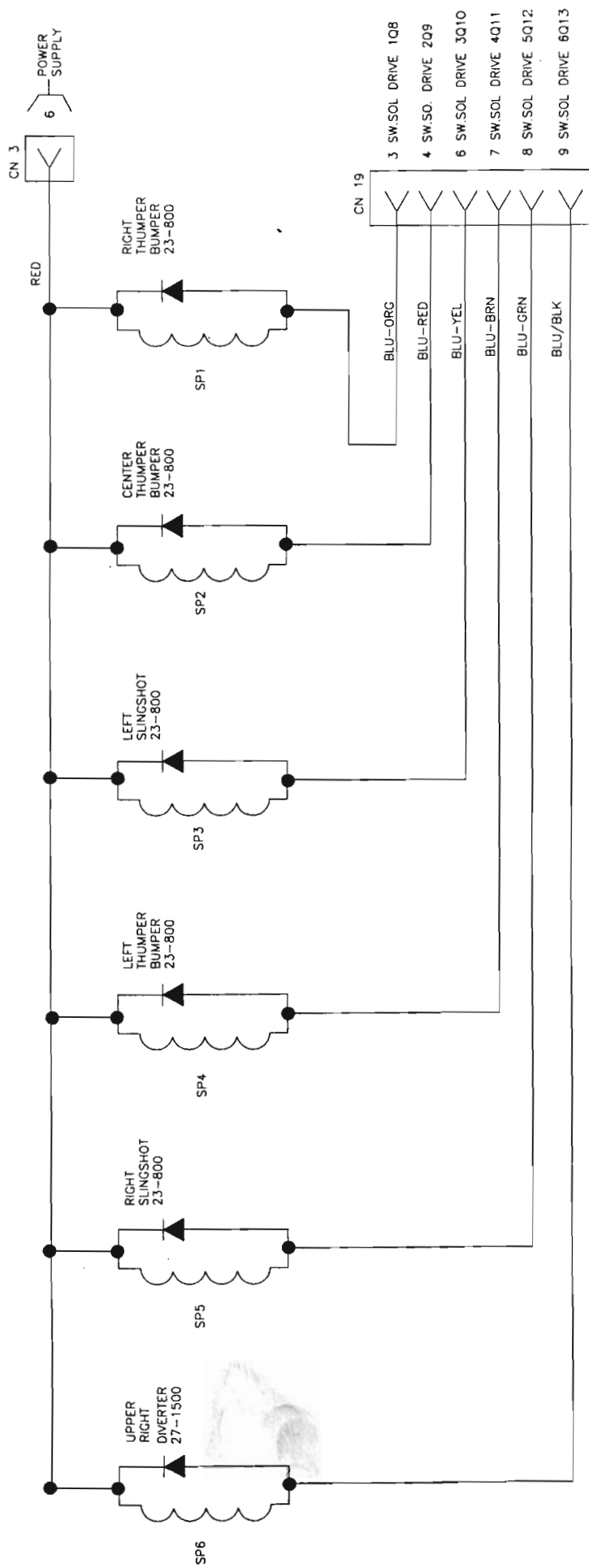
 3. All wiring should be done in accordance with the backbox wiring diagram.

 4. All wiring should be done in accordance with the backbox wiring diagram.

 5. All wiring should be done in accordance with the backbox wiring diagram.

6 BALL RELAY
 23-1320
 11
 A/B RELAY
 NORMALLY CLOSED SIDE = "N.C." = LEFT = "A" SIDE
 NORMALLY OPEN SIDE = "N.O." = RIGHT = "B" SIDE
 N.L. MEANS "NOT USED"





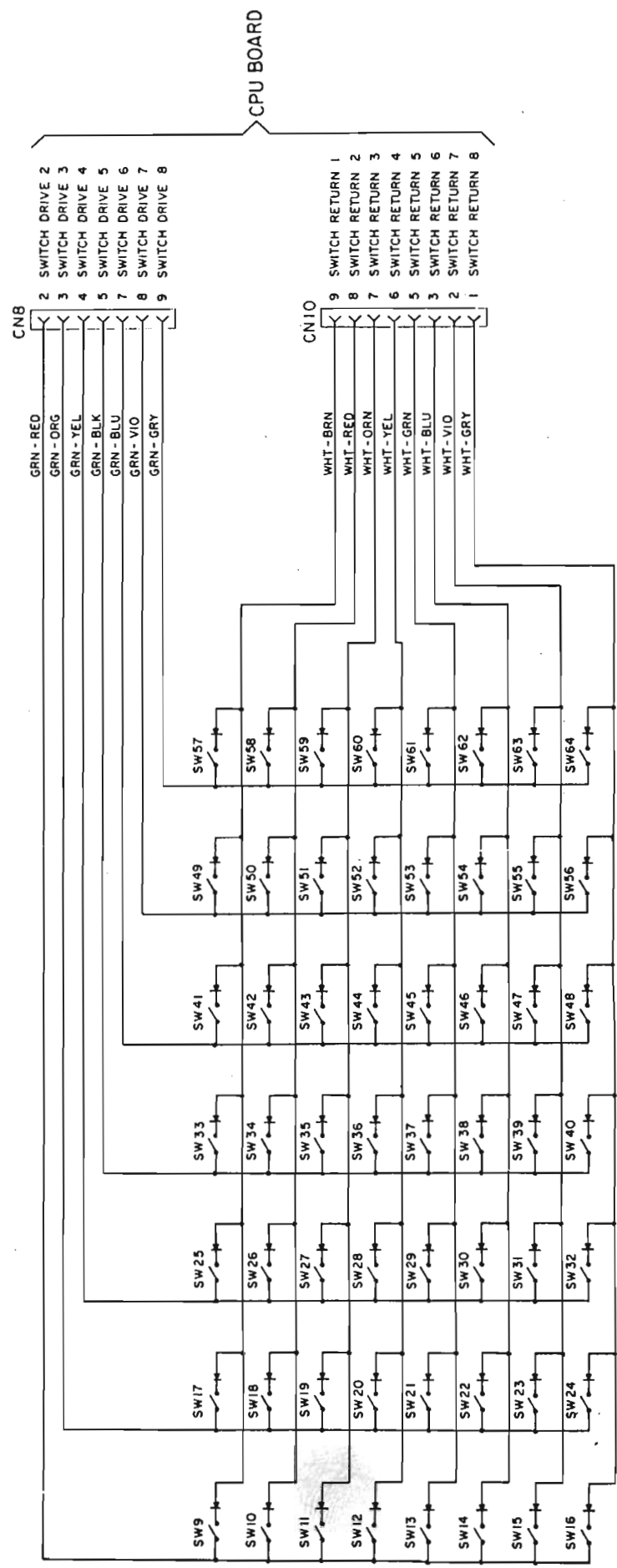
REV	DESCRIPTION	PR	DATE
3	SW.SOL DRIVE 10B		
4	SW.SOL DRIVE 209		
6	SW.SOL DRIVE 3Q10		
7	SW.SOL DRIVE 4Q11		
8	SW.SOL DRIVE 5Q12		
9	SW.SOL DRIVE 6Q13		

Switch Matrix No. & Description	Part No.
51 Right Turbo Bumper	180-5015-01
52 Left Top Rollover	180-5707-00
53 Middle Top Rollover	180-5707-00
54 Right Top Rollover	180-5707-00
55 *Out of the Ring*	180-5707-00
56 *Into the Ring*	180-5707-00
57 Not Used	---
58 Upper Playfield Exit	180-5707-00
59 Not Used	---
60 Not Used	---
61 Not Used	---
62 TAG Button	180-5093-00
63 Left Flipper Cabinet via Q7 (Transistor) on SSFB	180-5124-00
64 Right Flipper Cabinet via C5 (Transistor) on SSFB	180-5124-00

Switch Matrix No. & Description	Part No.
34 Amber LT 3-Bank Stand-Up *A*	515-5162-03
35 Amber LT 3-Bank Stand-Up *T*	515-5162-03
36 Yellow RT 3-Bank Stand-Up *T*	515-5162-06
37 Yellow RT 3-Bank Stand-Up *A*	515-5162-06
38 Yellow RT 3-Bank Stand-Up *G*	515-5162-06
39** Under Trough	180-5093-00
40** VUK (Middle)	180-5116-00
41 Left Ramp Enter	180-5090-00
42 Left Ramp Exit	180-5093-00
43 Middle Ramp Enter	180-5090-00
44 Middle Ramp Exit	180-5093-00
45 Right Rollover Bottom (LT Hand)	180-5707-00
46 Right Rollover Top	180-5707-00
47 Captive Ball	180-5706-01
48 Not Used	---
49 Left Turbo Bumper	180-5015-01
50 Bottom Turbo Bumper	180-5015-01

Switch Matrix No. & Description	Part No.
18 Left Return Lane	500-5707-00
19 Left Slingshot	180-5023-00
20 Super VUK (Right Side)	180-5054-00
21 Left Drop Target 1 *D*	180-5092-01
22 Left Drop Target 2 *A*	180-5092-01
23 Left Drop Target 3 *E*	180-5092-01
24 Left Drop Target 4 *D*	180-5092-01
25 Right Outlane	500-5707-00
26 Right Return Lane	500-5707-00
27 Right Slingshot	180-5023-00
28 Next to Eject Switch	180-5090-00
29 Upper Playfield Rollover	500-5707-00
30 Upper Playfield D.T. LT *WWF*	180-5092-01
31 Upper Playfield D.T. MID *WWF*	180-5092-01
32 Upper Playfield D.T. RT *WWF*	180-5092-01
33 Amber LT 3-Bank Stand-Up *G*	515-5162-03

Switch Matrix No. & Description	Part No.
01* Plumb Tilt	See Cabinet
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 Ball Trough #1 Left	180-5119-00
10 Ball Trough #2	180-5119-00
11 Ball Trough #3	180-5119-00
12 Ball Trough #4	180-5119-00
13 Ball Trough #5	180-5119-00
14 Ball Trough #6	180-5119-00
15 Ball Trough #7 Right	180-5118-00
16 Shooter Lane	180-5100-01
17 Left Outlane	500-5707-00



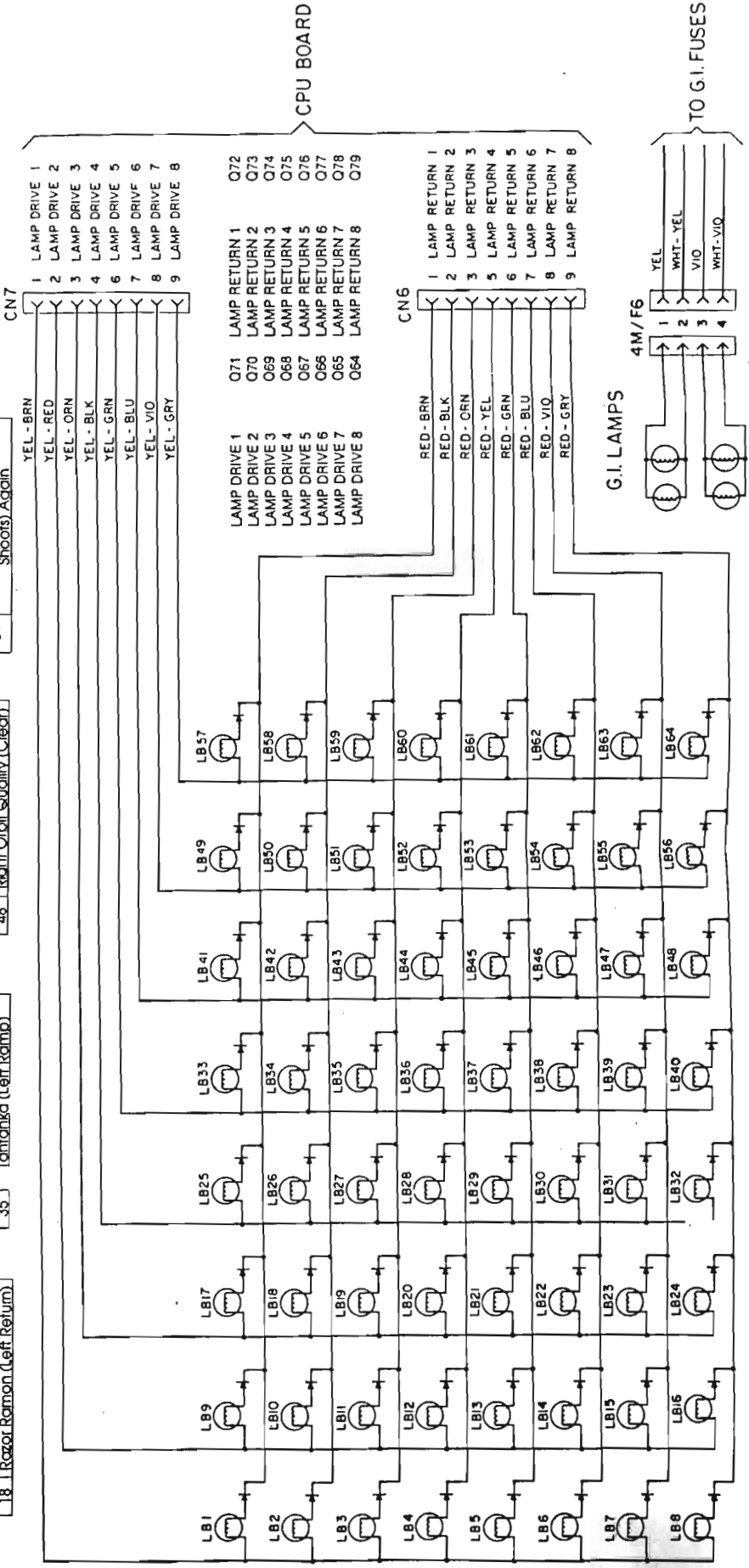
CPU BOARD

Lamp Matrix No. & Description
01 Rumble (Left)
02 Life Extra Ball
03 No Holds Bar
04 Pandemonium
05 Rumble (Middle)
06 Search for Doink
07 Super Pops Sleeper Hold
08 Raise The Undertaker
09 Rumble (Right)
10 Top Team Millions
11 Chameleon'sa Beif Round
12 Banzai
13 Enter the Ramp (Yellow) (Upper Playfield Ready)
14 Mode Start 2
15 TAG Button
16 Credit Button
17 In The Ring (Under Coffin)
18 Razor Ramon (Left Return)

Lamp Matrix No. & Description
19 Top Left Stand-Up *G*
20 Middle Left S.U. *A*
21 Bottom Left S.U. *I*
22 Top Right S.U. *I*
23 Middle Right S.U. *A*
24 Bottom Right S.U. *G*
25 Extra Ball
26 Macho Man Randy Savage (Right Return)
27 Buy-A-Ball
28 Special
29 (Left & Right Outlines)
30 Collect Toa
31 Left Top Lane
32 Middle Top Lane
33 Right Top Lane
34 Yokozuna (Left Ramp)
35 Doink (Left Ramp)
Tantanka (Left Ramp)

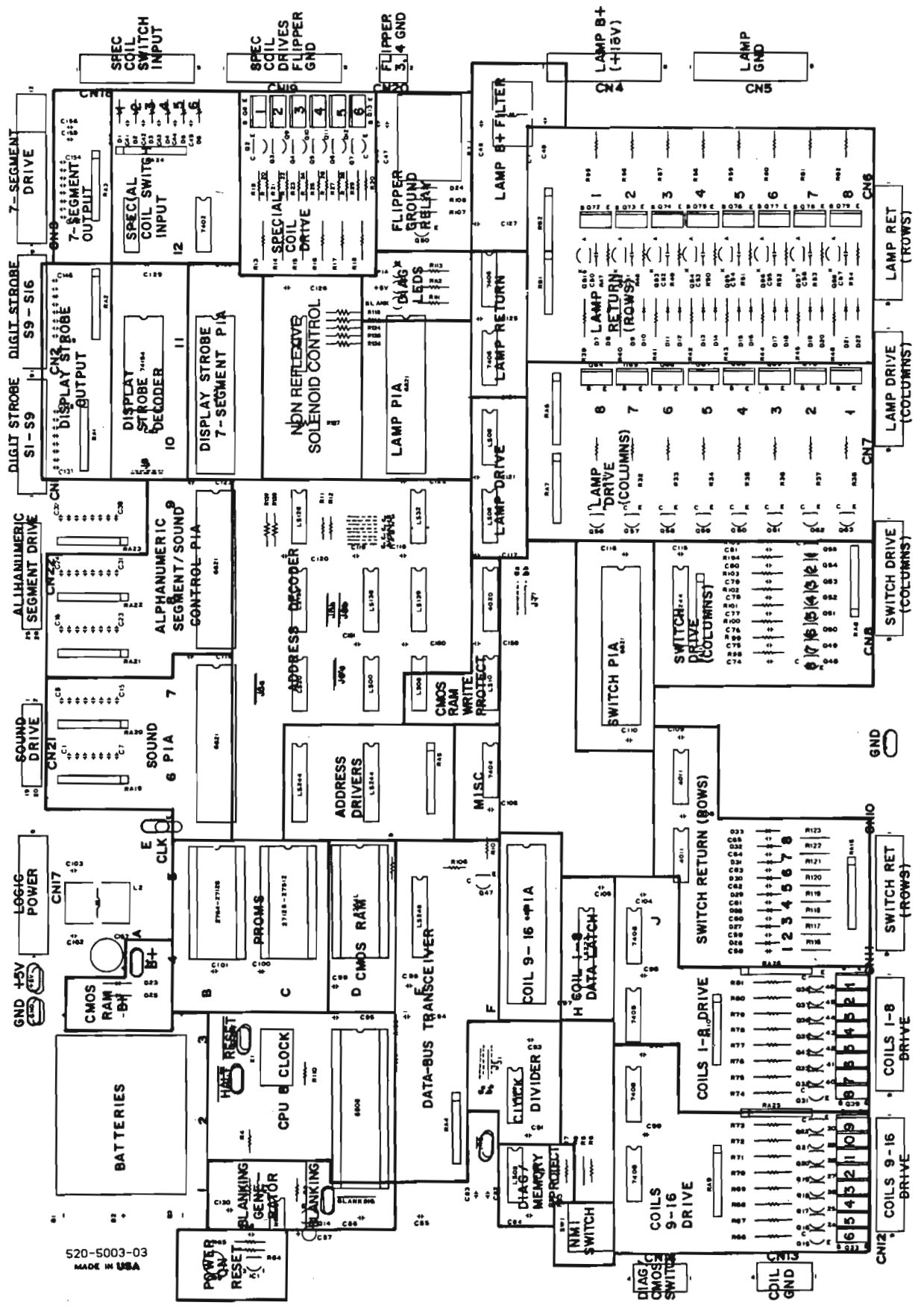
Lamp Matrix No. & Description
36 Jackpot (Left)
37 Bret "Hirman" Hart (Middle Ramp)
38 Hacksaw Jim Duggan (Middle Ramp)
39 Lex Luger (Middle Ramp)
40 Jackpot (Middle)
41 Crush (Right Ramp)
42 Big Boss Man (RT Ramp)
43 Shawn Michaels (Right Ramp)
44 Jackpot (Right)
45 Banzai (Orange) (Left Ramp Squally)
46 Mode Start 1
47 Life Mode Start (White) (Middle Ramp Squally)
48 Right Orbit Squally (Clear)

Lamp Matrix No. & Description
49 Upper P/F Left Drop Target
50 Upper P/F MID Drop Target
51 Upper P/F Right D.T.
52 Upper Drop Targets Ready
53 Left Over Elect (Yellow)
54 Right Over Elect (Green)
55 Increase Jackpot (Up, P/F Arrow Top)
56 Upper Playfield Exit (Up, P/F Arrow Bottom)
57 Coffin (Yellow) I.D.T.
58 Coffin (Orange) I.D.T.
59 Macho Madness
60 "M-Ball" (Multi-Ball) Start
61 Left Turbo Bumper
62 Bottom Turbo Bumper
63 Right Turbo Bumper
64 "Wrestle" (Same Player Shoots) Again

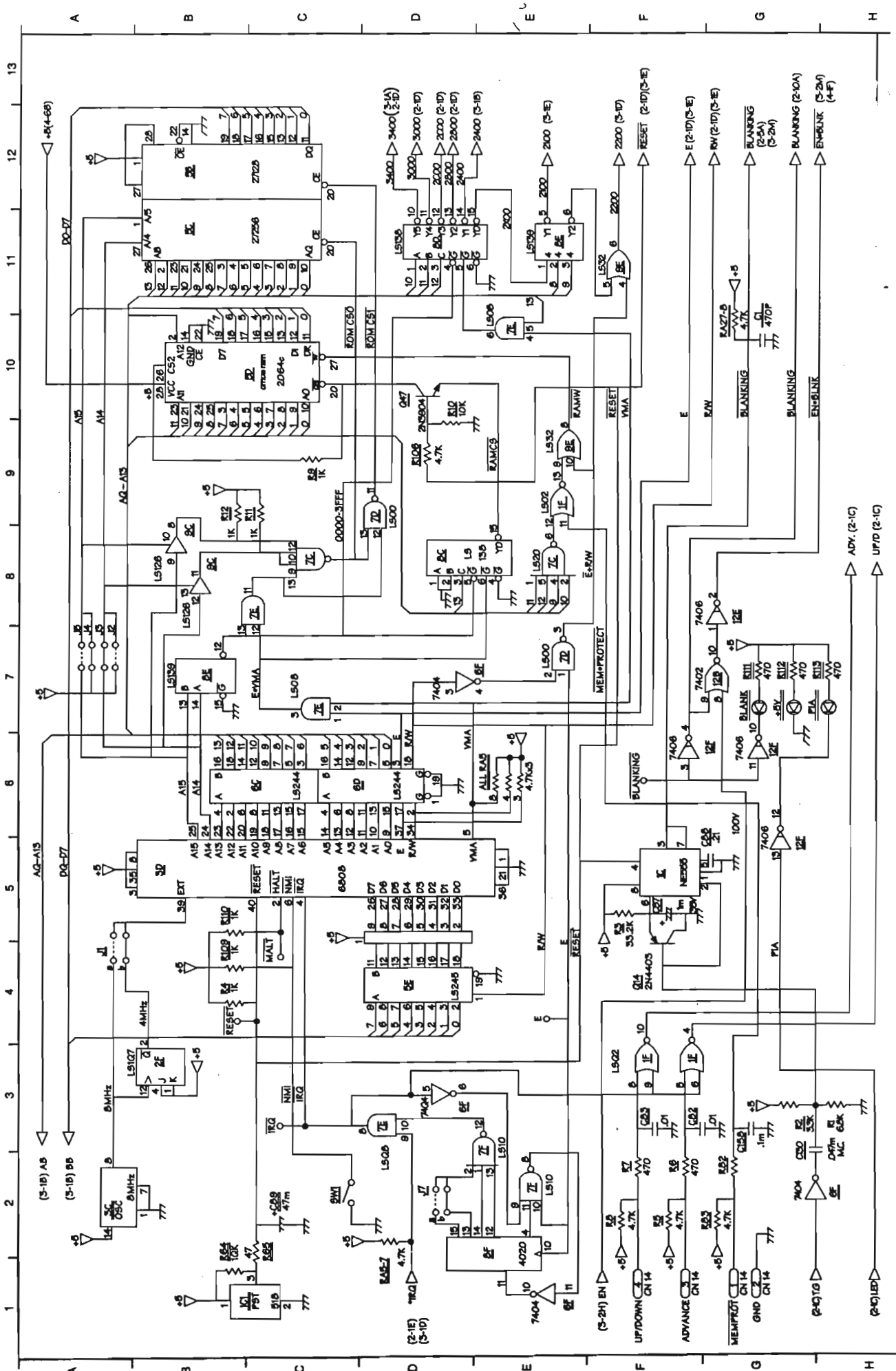


Playfield Lamp Wiring Diagram

CPU Board Assembly Diagram

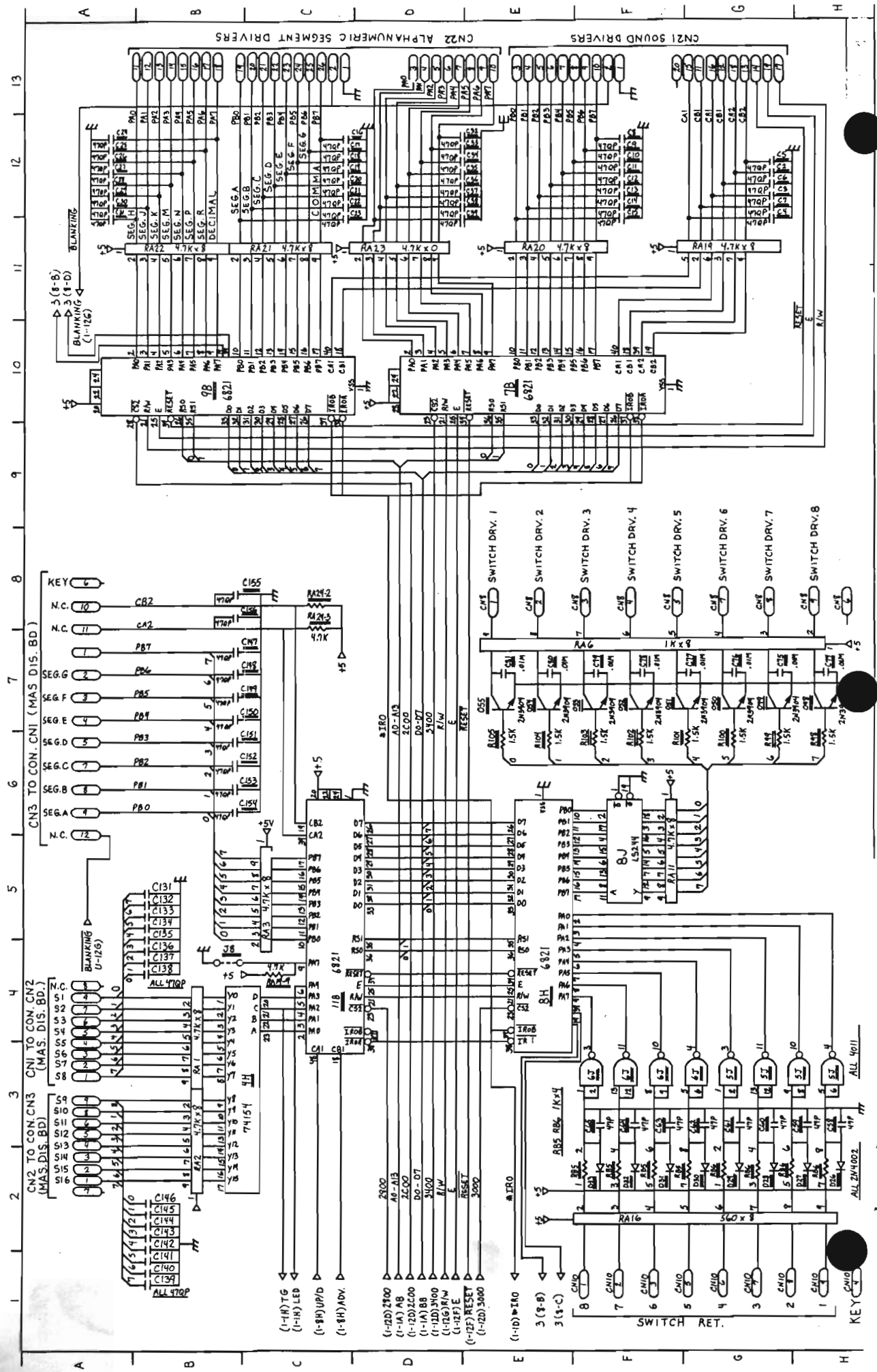


520-5003-03
MADE IN USA

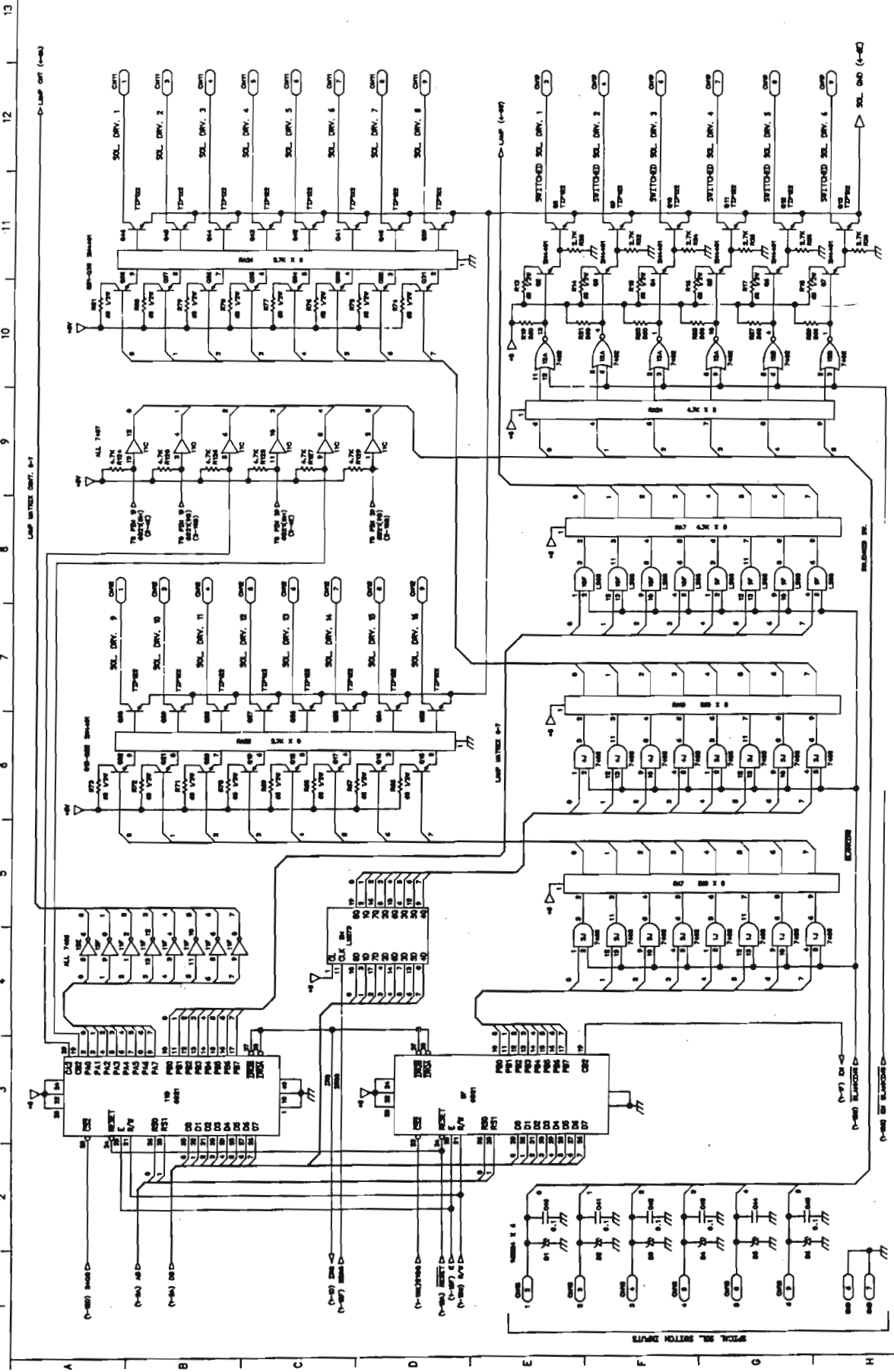


CPU Board Logic Diagram (Sheet 1)

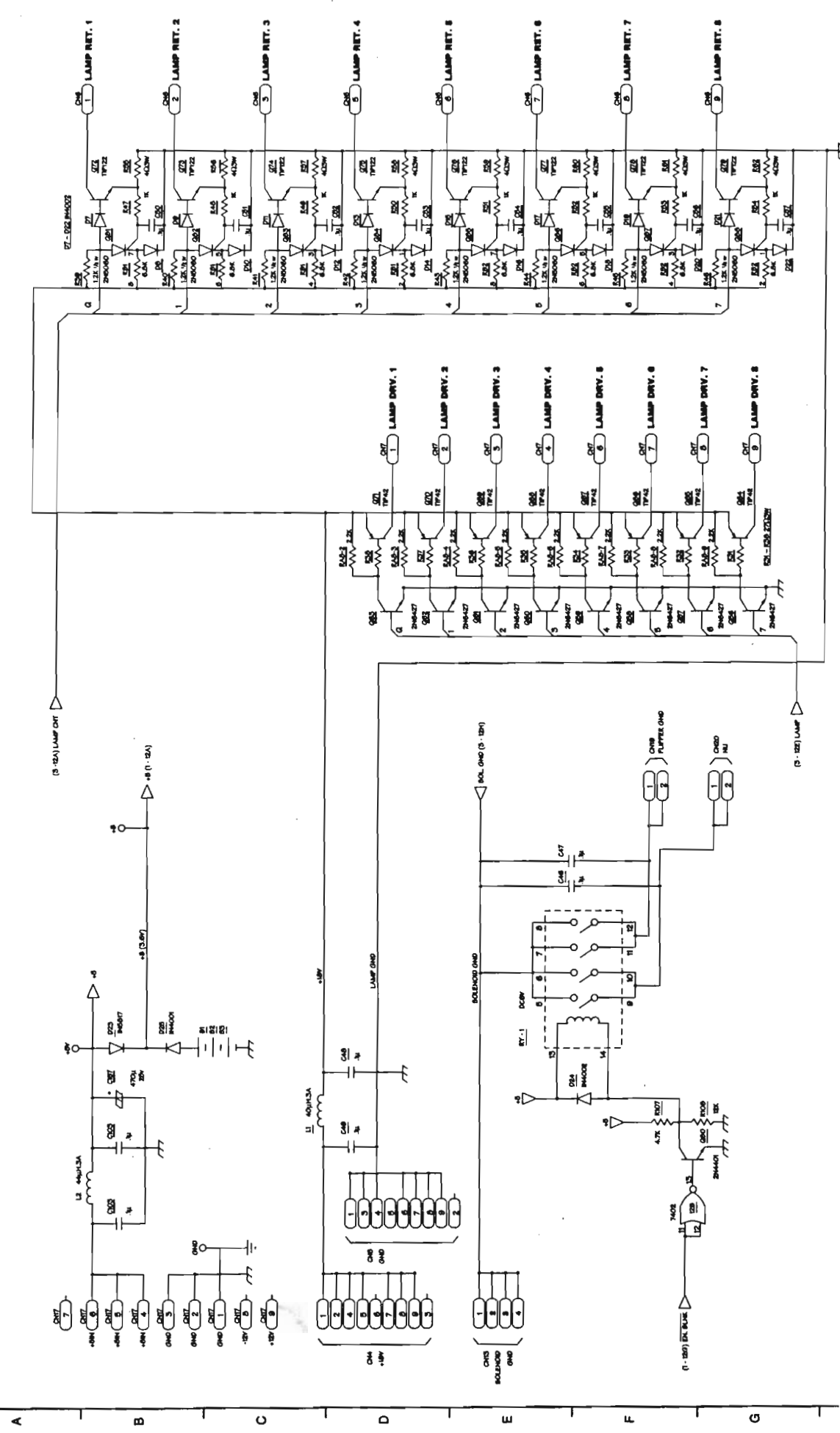
CPU Board Logic Diagram (Sheet 2)

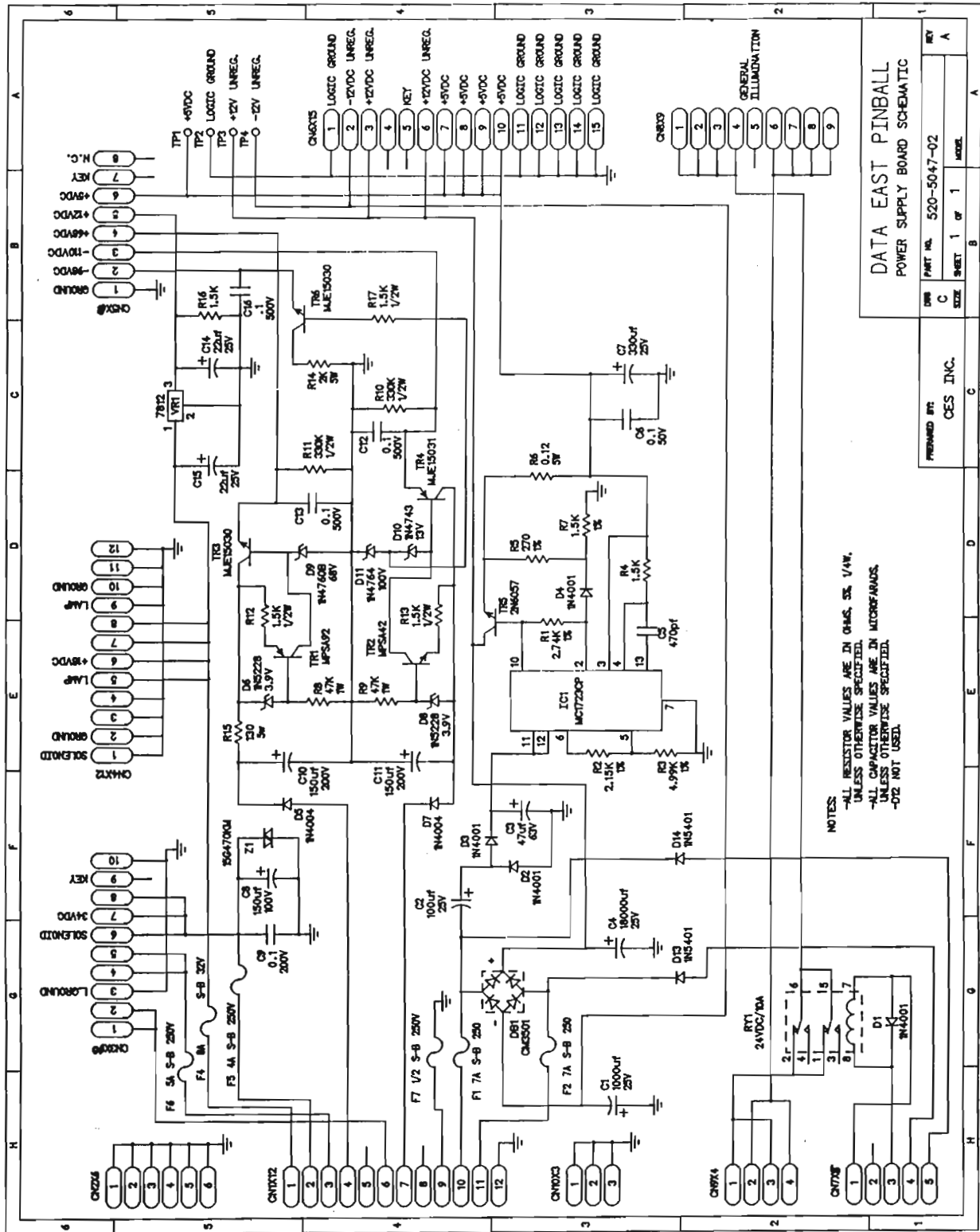


CPU Board Logic Diagram (Sheet 3)



1 2 3 4 5 6 7 7 9 10 11 12 13





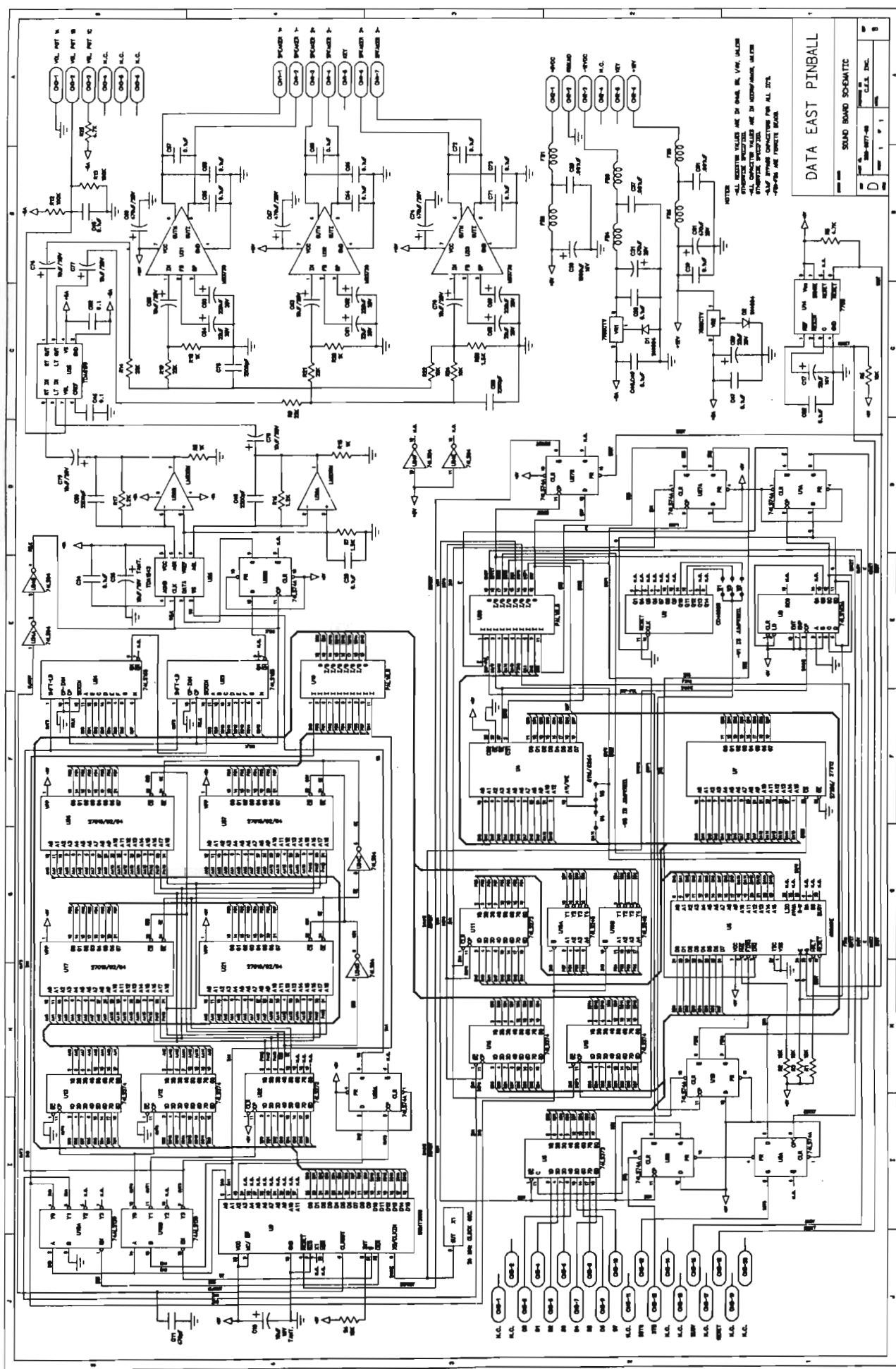
NOTES
 -ALL RESISTOR VALUES ARE IN OHMS, Ω , $\frac{1}{2}$ W.
 -UNLESS OTHERWISE SPECIFIED.
 -ALL CAPACITOR VALUES ARE IN MICROFARADS.
 -UNLESS OTHERWISE SPECIFIED.
 -D12 NOT USED.

DATA EAST PINBALL
 POWER SUPPLY BOARD SCHEMATIC

REV	A
DATE	
DESIGNER	C
PART NO.	520-5047-02
SIZE	SHEET 1 OF 1
MODEL	

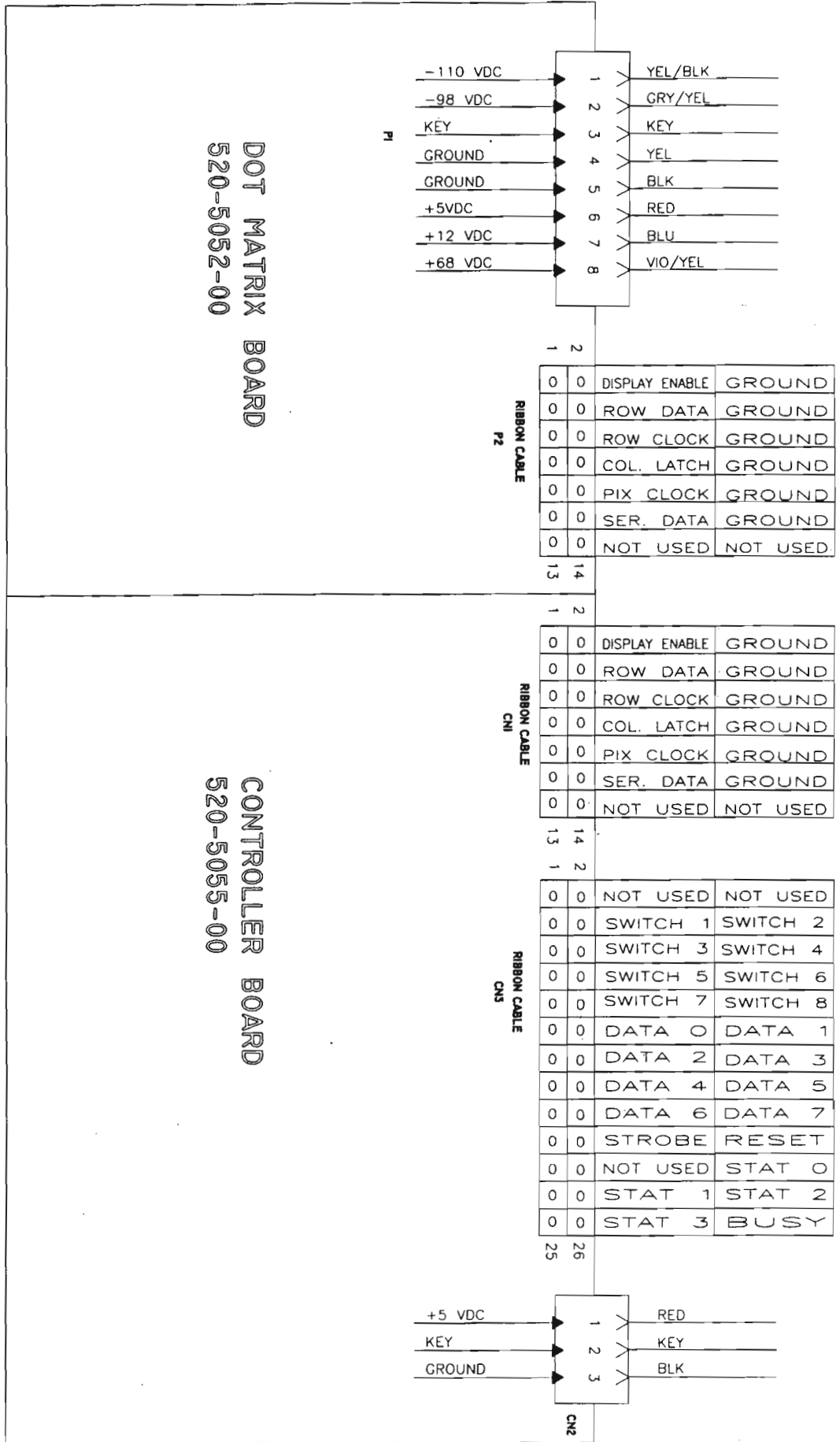
PREPARED BY: CES INC.

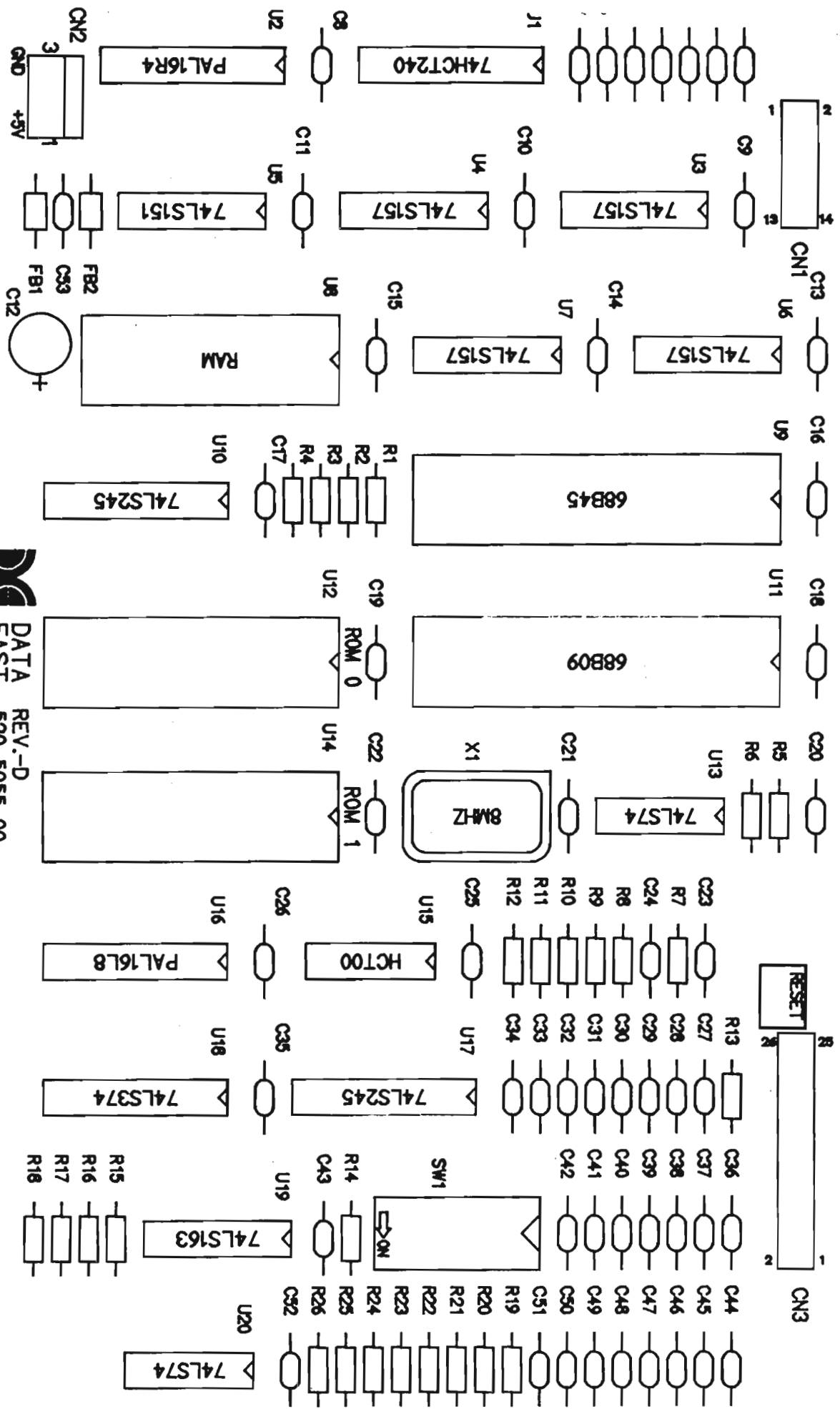
Sound Board (520-5077-00) Schematic



DATA EAST PINBALL
 SOUND BOARD SCHEMATIC
 C.L.A. INC.
 1 1 1

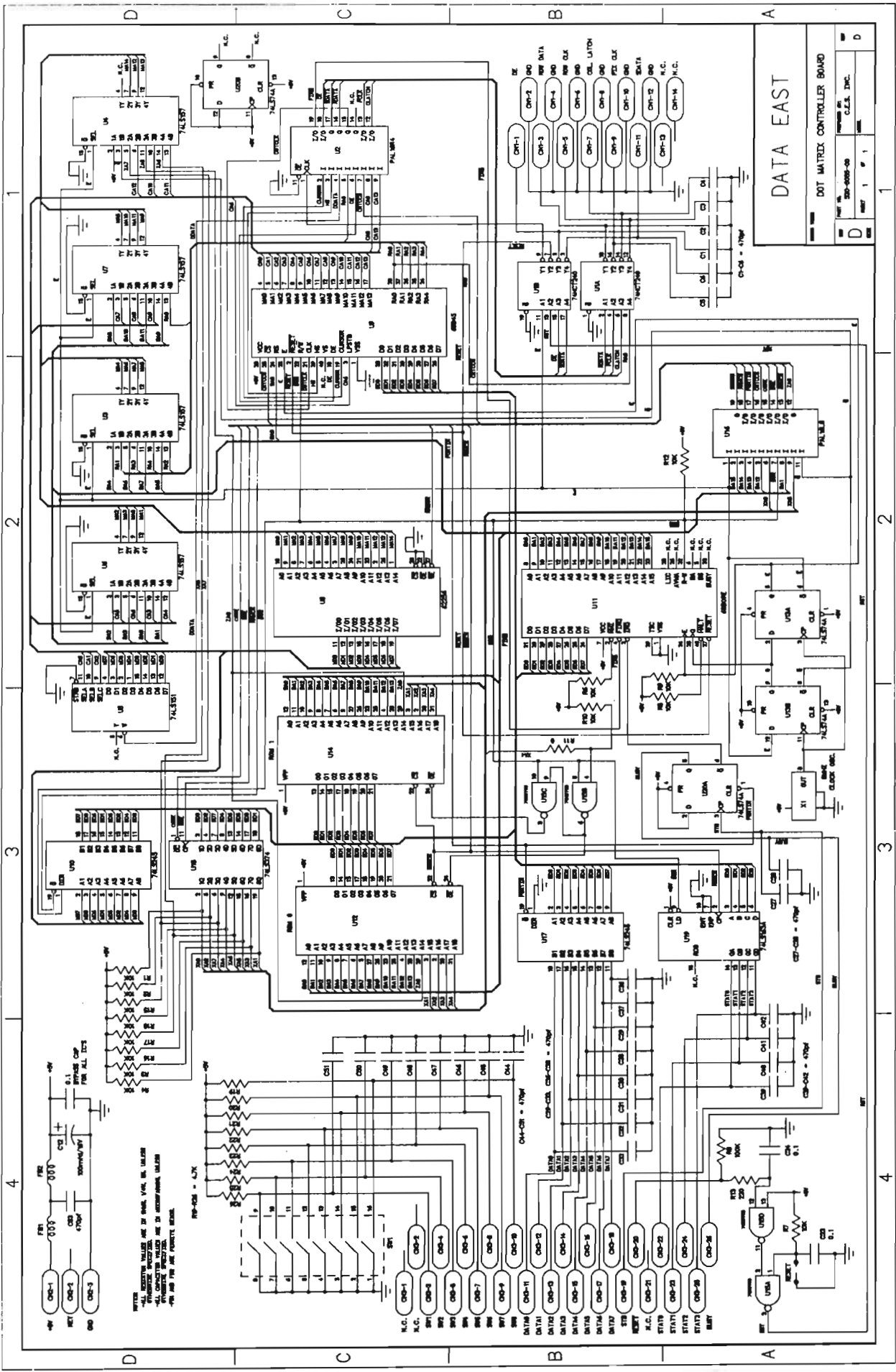
NOTES:
 -ALL RESISTOR VALUES ARE IN OHMS, UNLESS OTHERWISE SPECIFIED.
 -RESISTOR VALUES ARE IN KILOHMS, UNLESS OTHERWISE SPECIFIED.
 -ALL CAPACITOR VALUES ARE IN MICROFARADS, UNLESS OTHERWISE SPECIFIED.
 -RESISTORS ARE PRECISION GRADE.





DATA REV.-D 520-5055-00 EAST

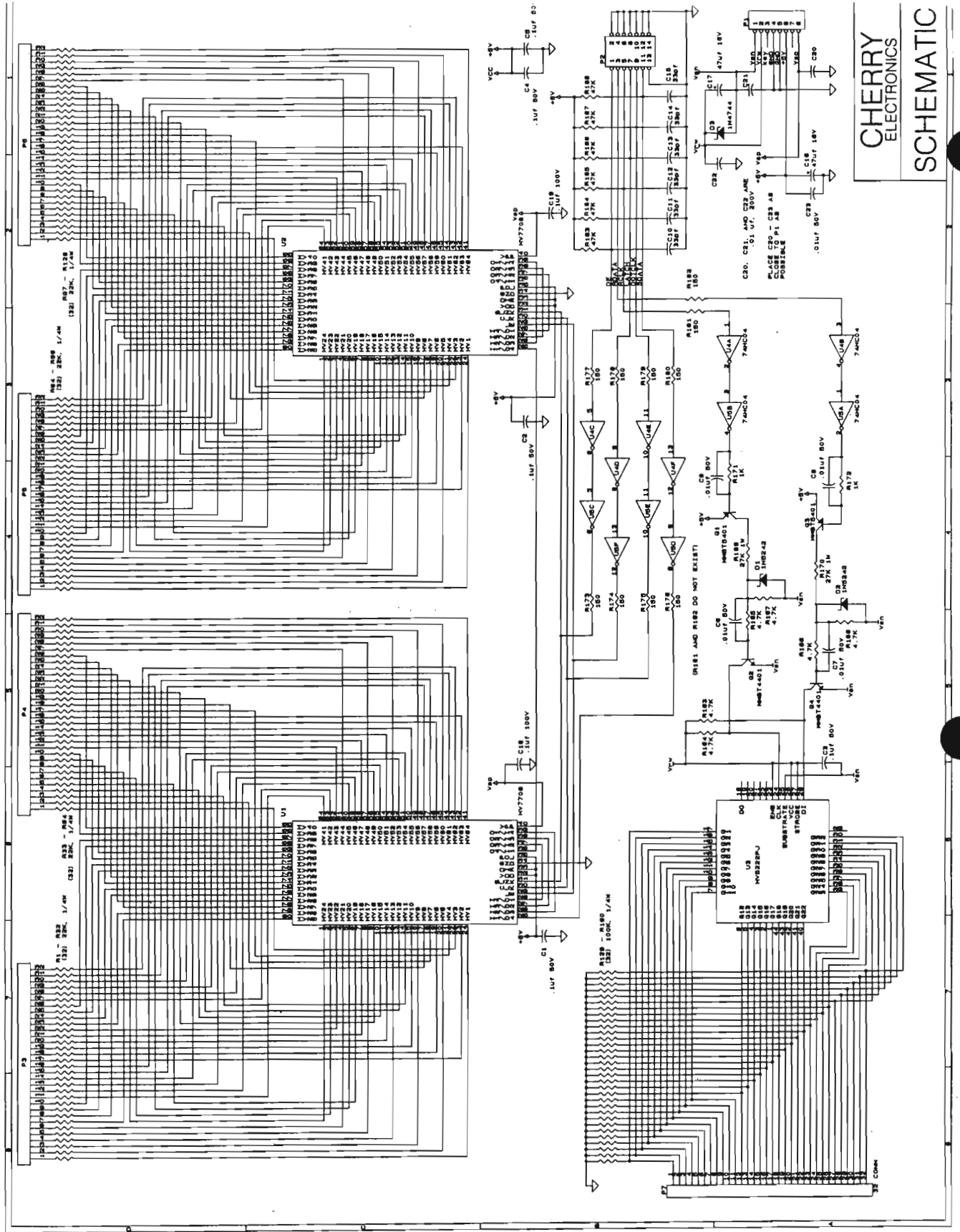
Display Controller Board Schematic



DATA EAST	
DOT MATRIX CONTROLLER BOARD	
REV. NO.	200-0000-00
REV. DATE	1 1 1
REV. BY	C.L.E. INC.
REV. NO.	D
REV. DATE	1 1 1
REV. BY	D

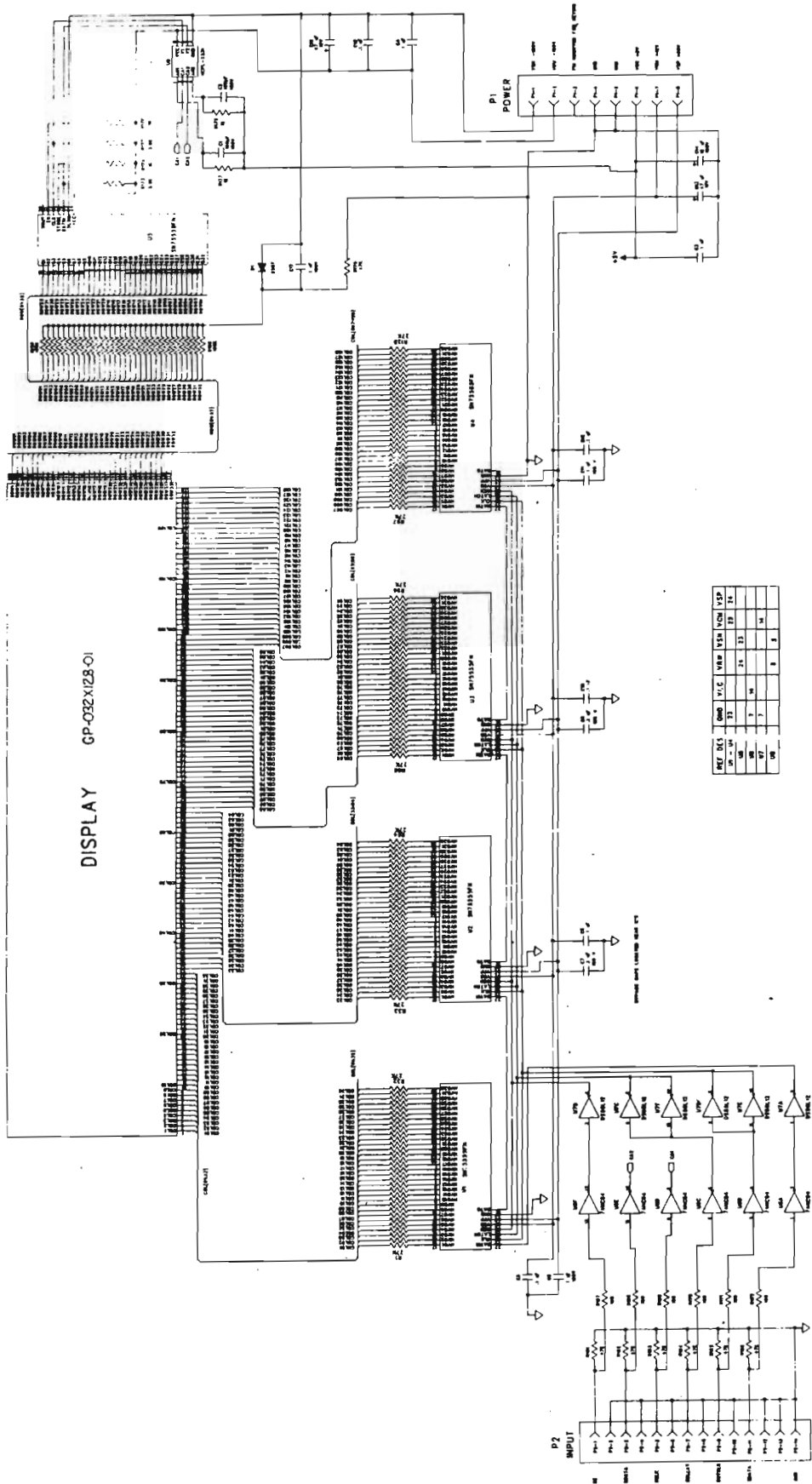
FOR THE PURPOSES OF THIS SCHEMATIC, THE BOARD IS ASSUMED TO BE IN THE "ON" STATE. THE BOARD IS ASSUMED TO BE IN THE "ON" STATE. THE BOARD IS ASSUMED TO BE IN THE "ON" STATE.

Display Driver, Drawing 1 (CHERRY)



CHERRY ELECTRONICS SCHEMATIC

Display Driver, Drawing 2 (BARBCKOCK)



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

BARBCKOCK
 401 S EAST STREET, HANFORD, CALIFORNIA 98304

SCHEMATIC

FILE: DP-15128-5.CM
 PADS LOGIC VER. 2.03

DATE: 10/15/88
 DRAWN BY: J. J. JENSEN
 CHECKED BY: J. J. JENSEN
 APPROVED BY: J. J. JENSEN

DO NOT SCALE PRINT

SCALE: 1:1

UNIT NO. 88848
 SHEET 1 OF 1

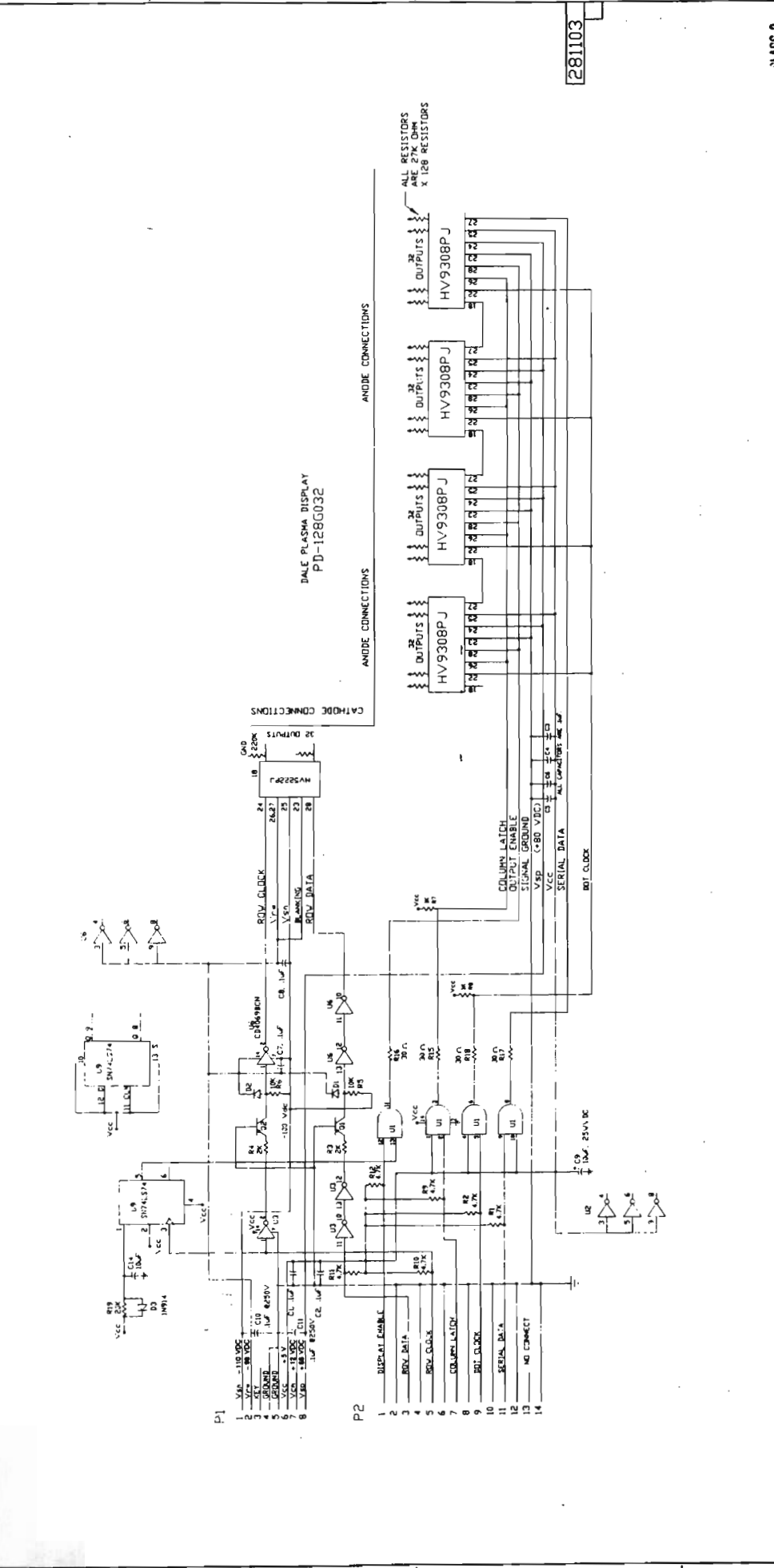
SIZE D

A 10750 CLASS X RELEASE 78-24174

Display Driver, Drawing 3 (DALE)

1 2 3 4 5 6 7

DATE	APPROVED



DALE ELECTRONICS, INC.		CLASS 2	
A COLUMBUS, NEBRASKA		DALE	
ELECTRICAL SCHEMATIC		DATE	
APD-128G032		02/02/82	
TITLE		DESIGNED BY	
APD-128G032		D. J. JARVIS	
DRAWN BY		CHECKED BY	
D. J. JARVIS		D. J. JARVIS	
MATERIAL		APPROVED BY	
FINISH		02/13/82	
91637		DRAWN BY	
281103		D	
SHEET		NO. OF SHEETS	
2		1 OF 1	

REV. 1	DATE	DESCRIPTION

NOTES

281103

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.

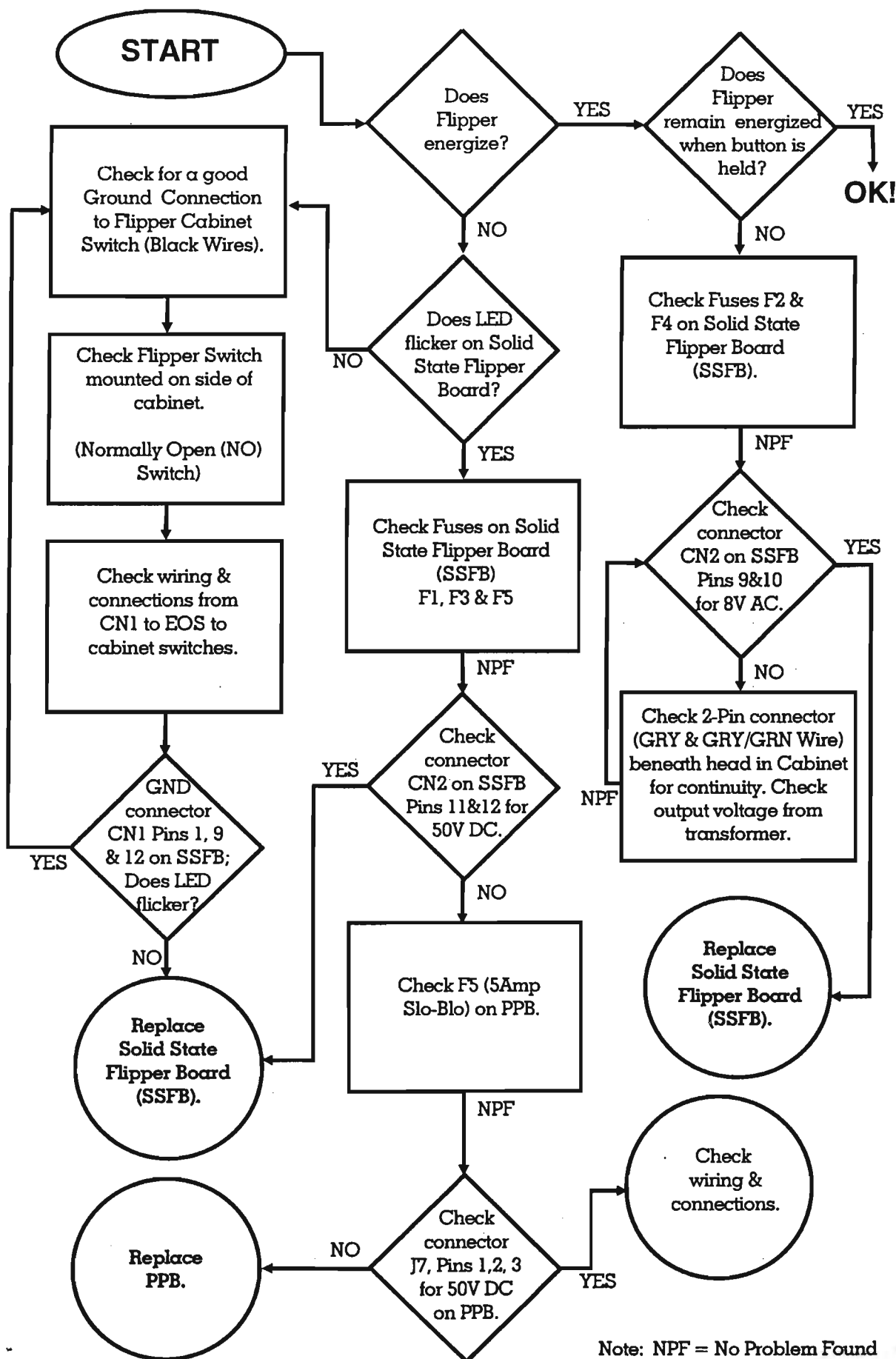
E.O.S. Switch Adjustment

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

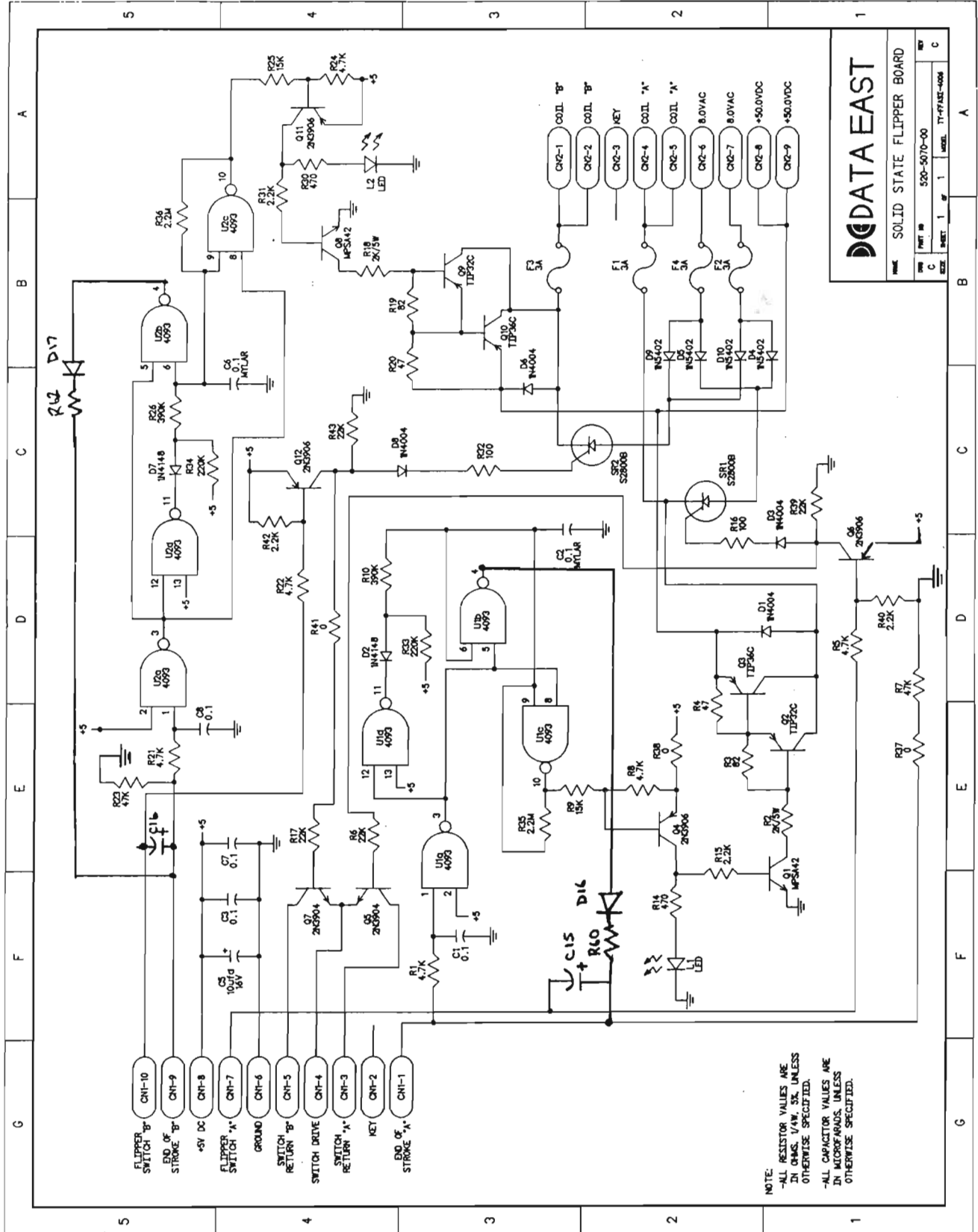
The only indication of a problem you will have is the player complaining that when the flipper bat is being held in the up position, a high velocity shot from one of the playfield solenoids causes the ball to hit the flipper bat and physically knock it back. This will not occur if the E.O.S. is working.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

Solid State Flipper Circuit Troubleshooting Flowchart



Note: NPF = No Problem Found

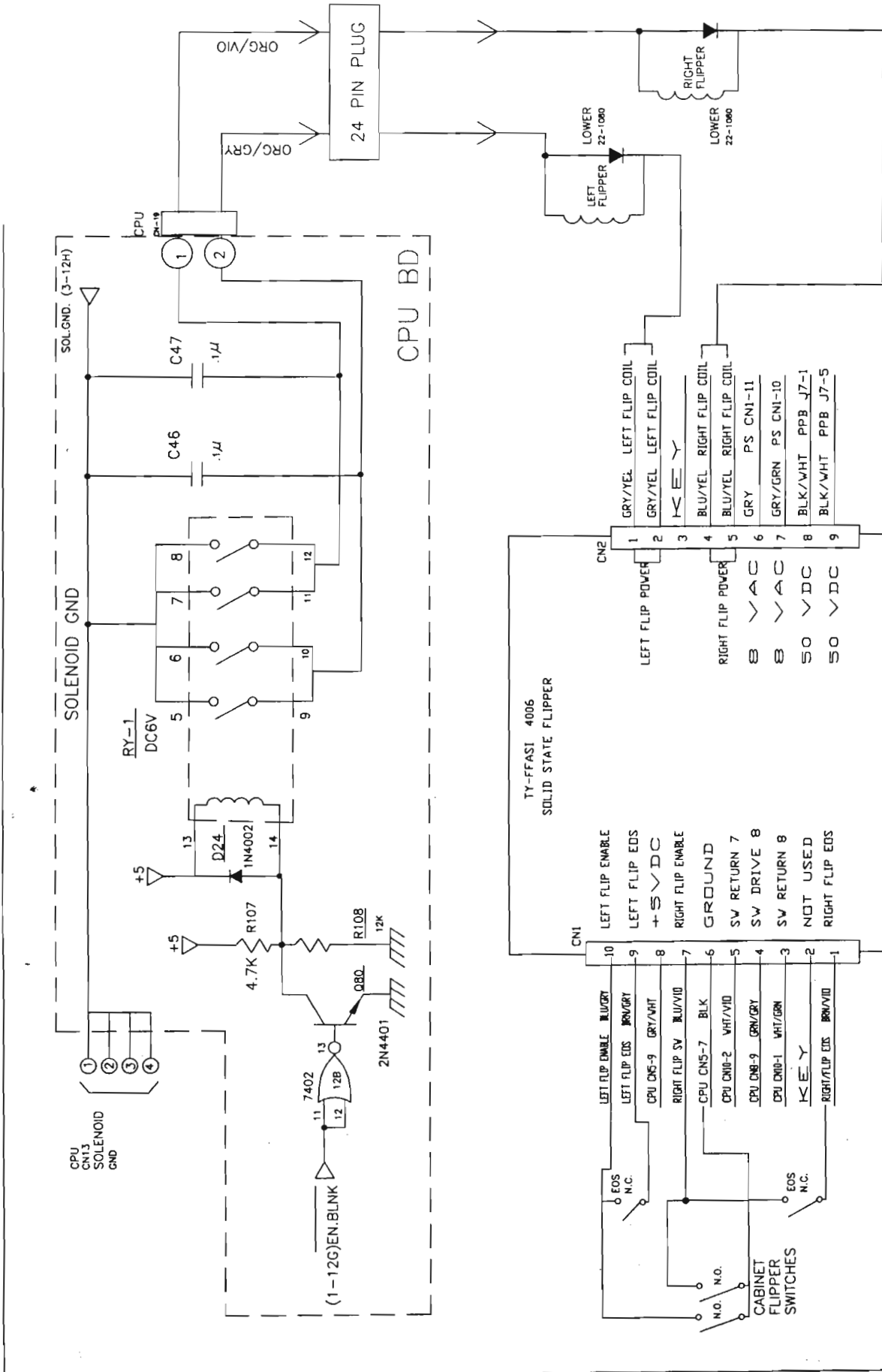
NEW Solid State Flipper Board Schematic



DATA EAST

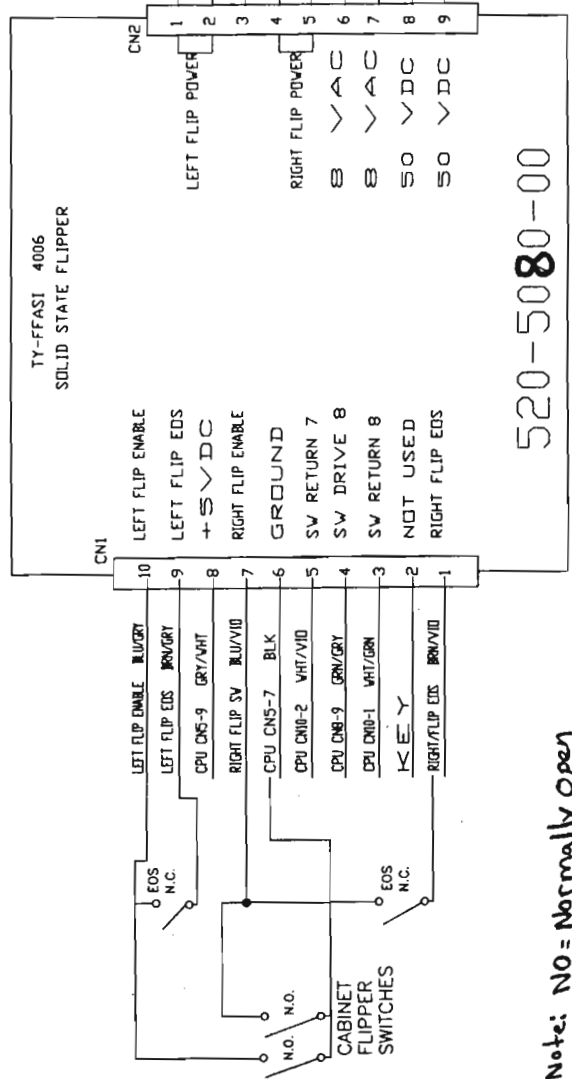
NAME: SOLID STATE FLIPPER BOARD

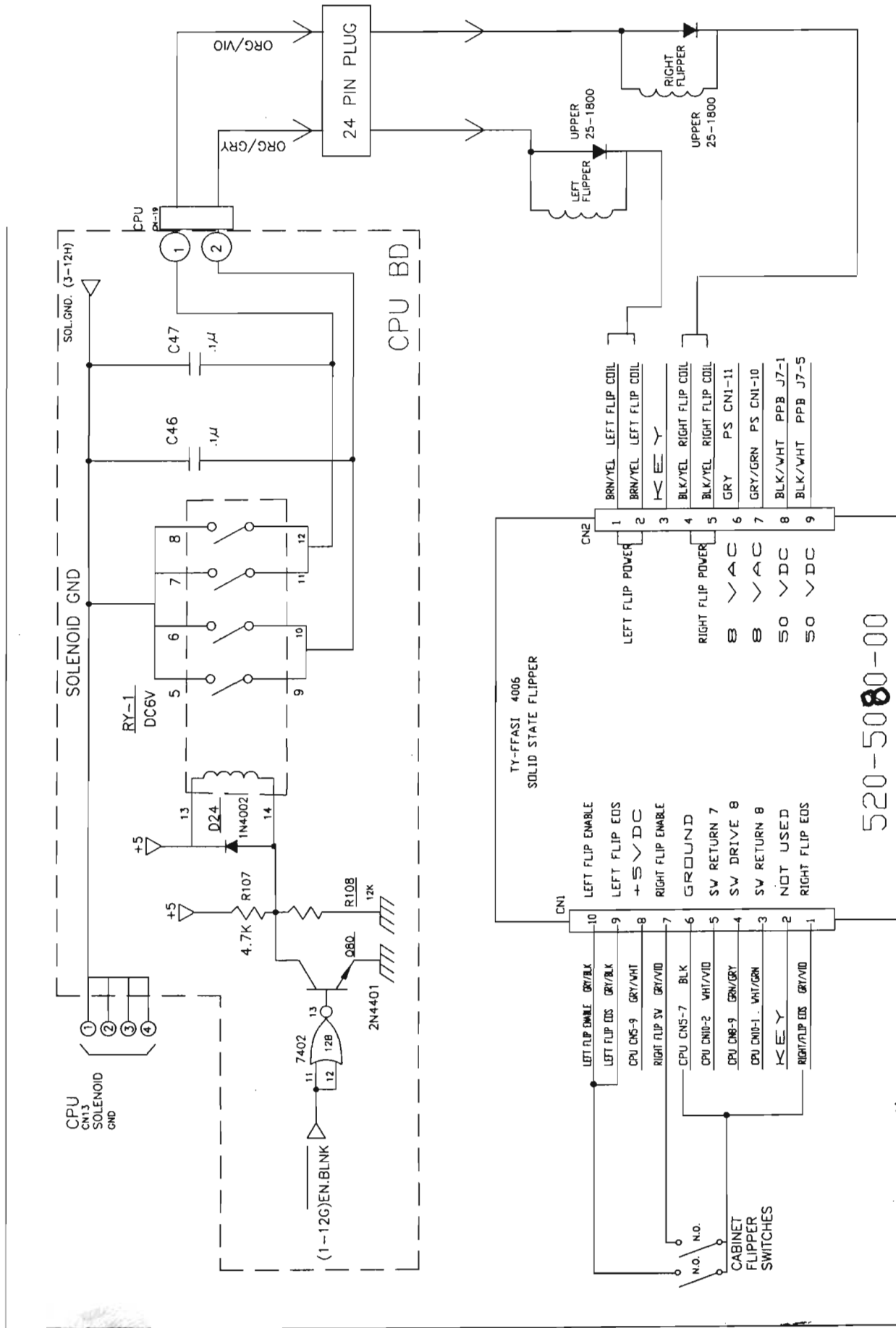
REV	C
DATE	5-20-50/70-00
SIZE	1 OF 1
MODEL	TY-PP-452-0006



800-5025

Note: NO = Normally Open
NC = Normally Closed





Note: NO = Normally Open
NC = Normally Closed

