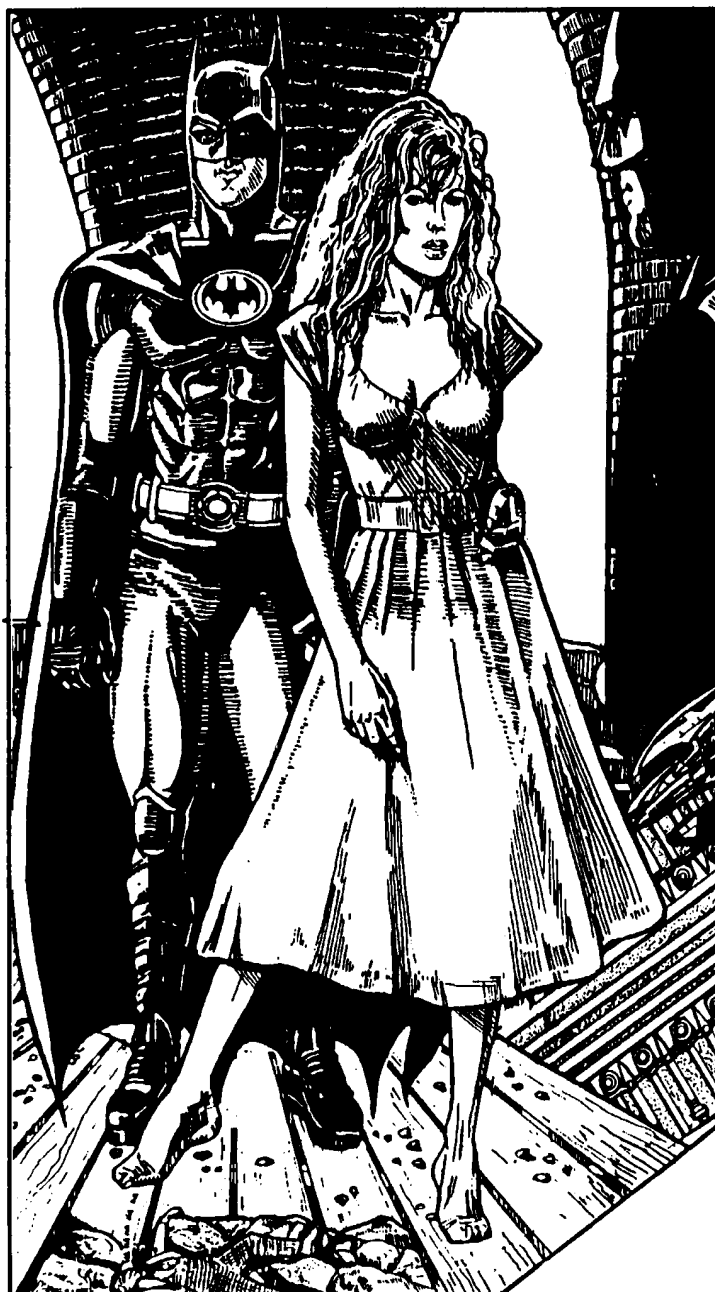




# BATMAN



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**1-800-KICKERS**

**DATA EAST PINBALL®**



**FLIPPERSPILL.COM**

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780-5011-00

## CPU JUMPER TABLE

| Game                     | CPU*<br>Version | ROM<br>Location | Jumpers                   |                        |
|--------------------------|-----------------|-----------------|---------------------------|------------------------|
|                          |                 |                 | Installed                 | Removed                |
| Laser Wars               | Ver 1           | 5C              | J1b,J3,J4,J6a,J7a,&J8     | J1a,J2,J5,J6,&J7b      |
|                          | Ver 2           | 5C              | J1b,J3,J4,J5a,J6a,J7b,&J8 | J1a,J2,J5,J5b,J6b,&J7a |
| Secret Service           | Ver 2           | 5B,5C           | J1b,J3,J4,J5b,J6b,J7b,&J8 | J1a,J2,J5,J5a,J6a,&J7a |
| Torpedo Alley            | Ver 2           | 5B,5C           | J1b,J3,J4,J5b,J6b,J7b,&J8 | J1a,J2,J5,J5a,J6a,&J7a |
| Time Machine             | Ver 2           | 5B,5C           | J1b,J3,J4,J5b,J6b,J7b,&J8 | J1a,J2,J5,J5a,J6a,&J7a |
| Playboy                  | Ver 2           | 5B,5C           | J1b,J3,J4,J5b,J6b,J7b,&J8 | J1a,J2,J5,J5a,J6a,&J7a |
| ABC M.N. Football        | Ver 2           | 5B,5C           | J1b,J3,J4,J5b,J6b,J7b,&J8 | J1a,J2,J5,J5a,J6a,&J7a |
| Robocop                  | Ver 2           | 5B,5C           | J1b,J3,J4,J5b,J6b,J7b,&J8 | J1a,J2,J5,J5a,J6a,&J7a |
| Phantom of the Opera     | Ver 2           | 5B,5C           | J1b,J3,J4,J5b,J6b,J7b,&J8 | J1a,J2,J5,J5a,J6a,&J7a |
| Back to the Future       | Ver 3           | 5B,5C           | J1b,J3,J4,J5b,J6b,J7b,&J8 | J1a,J2,J5,J5a,J6a,&J7a |
| The Simpsons             | Ver 3           | 5B,5C           | J1b,J3,J4,J5b,J6b,J7b,&J8 | J1a,J2,J5,J5a,J6a,&J7a |
| Checkpoint               | Ver 3           | 5B,5C           | J1b,J3,J4,J5b,J6b,J7b,&J8 | J1a,J2,J5,J5a,J6a,&J7a |
| Teen. Mut. Ninja Turtles | Ver 3           | 5B,5C           | J1b,J3,J4,J5b,J6b,J7b,&J8 | J1a,J2,J5,J5a,J6a,&J7a |
| Batman                   | Ver 3           | 5B,5C           | J1b,J3,J4,J5b,J6b,J7b,&J8 | J1a,J2,J5,J5a,J6a,&J7a |

\*Version 1 has a 2K RAM which is a 24-pin IC at location 5D.

\*Version 2 has an 8K RAM which is a 28-pin IC at location 5D.

## 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 test are indicated by the PIA LED.

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

### PIA LED

Stays On  
Flashes 1 Time  
Flashes 2 Times  
Flashes 3 Times

### SUSPECT COMPONENT

One of the 6821 PIAs  
6064 RAM at location D5.  
EPROM at location B5.  
EPROM at location C5.

## QUICK REFERENCE FUSE CHART

### PPB BOARD

F1 5A Slo-Blo G.I. 6.3VAC  
F2 5A Slo-Blo G.I. 6.3VAC  
F3 5A Slo-Blo G.I. 6.3VAC  
F4 5A Slo-Blo G.I. 6.3VAC  
F5 5A Slo-Blo Flipper Power 48VAC  
F6 5A Slo-Blo PPB Solenoids/Flash Lamps (34VDC)

### POWER SUPPLY BOARD

F1 7A Slo-Blo +5VDC Regulator Input (9VAC)  
F2 7A Slo-Blo +5VDC Regulator Input (9VAC)  
F3 Not Used  
F4 8A Slo-Blo Switched Illumination Buss (18VDC)  
F5 4A Slo-Blo Solenoid Buss (34VDC)  
F6 5A Slo-Blo Solenoid Buss (34VDC)  
F7 0.5A Slo-Blo Display Reg. Input (90VAC)

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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 Vac (211 to 225 Vac)

**High Line:** (226 to 235 Vac)

**Low Line:** 95 to 108 Vac (200 to 210 Vac)

## MAJOR ASSEMBLY AND FUSE LOCATIONS

Refer to the Game Illustration (page 2) to identify locations of the major assemblies, and fuse values and locations.

## PROM SUMMARY

CPU Board: Location 5B, 5C

Sound Board: Locations U17 (Voice ROM 1), U21 (Voice ROM 2), and U7 (Sound ROM)

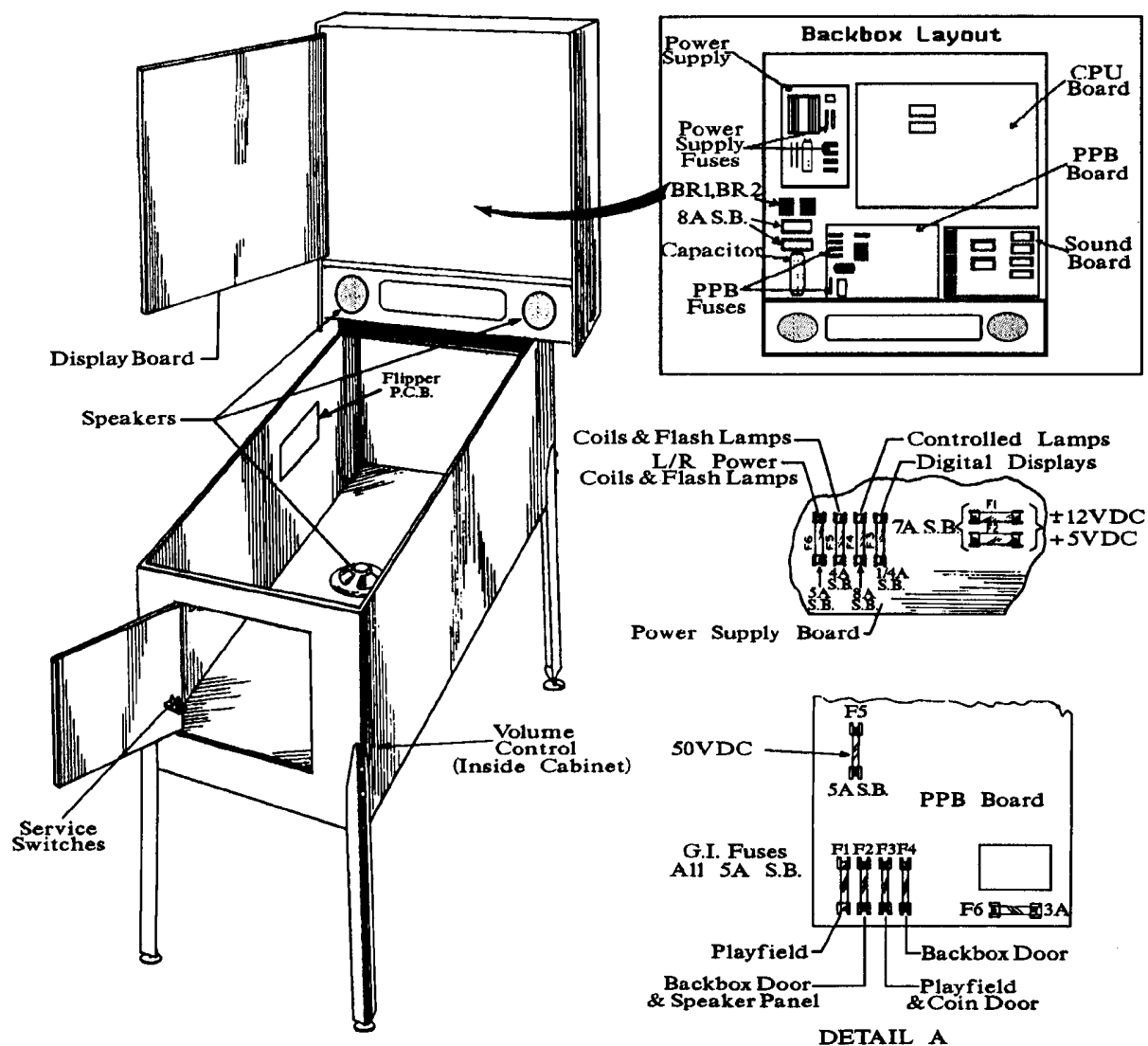
Display Board: Location U8

## 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.

## GAME ASSEMBLY PROCEDURES (Refer to the Game Illustration on page 2)

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. Locate cabinet legs in filler packing inserts and assembly parts package in the cashbox. There should be four leg levelers, eight leg bolts, three pinballs and a large Allen Wrench used for securing the backbox.
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 by inserting the Allen Wrench in the hole in the back of the cabinet and rotating the wrench 270 degrees(3/4 turn).



## GAME ILLUSTRATION

7. Remove the backbox keys from the clip on the inside of the coin door and unlock and carefully remove the backglass. Set the backglass aside.
8. Carefully remove the playfield glass and set it aside.
9. Check all connectors in the backbox for loose wire terminations. Reseat any loose wire by pushing in on the terminal.
10. 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.
11. Check that the fuses on the Power Supply board, PPB board and fuse panel are seated properly.
12. Raise the playfield and the support bar on the right side of the cabinet; support the playfield by inserting the support bar into the countersunk notch on the bottom side.
13. Check all cabinet cable and playfield lamp board connector terminations.

14. Remove the Plumb tilt from the parts package and install on the panel on the inside left of the cabinet. Note that this game is not equipped with a ball roll tilt.

15. Lower the playfield and level the playfield side-to-side by adjusting leg levelers.

16. Using an inclinometer (protractor) adjust the pitch of the playfield to 6.5 degrees. If a pitch indicating meter is not available, adjust the front levelers to the lowest position and extend the rearleg levelers approximately half way out. Readjust side-to-side level as required.

### **NOTE**

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 three 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.

## **GAME OPERATION**

### **STANDARD FEATURES**

Insert coin(s), the game makes a sound for the first credit and generates sounds for each subsequent coin and the Player 4 display indicates the number of credits posted. Depress the credit button and a start-up sound is produced, the posted credits are reduced by one, Player 1 display flashes, Player 4 display indicates BALL 1, and a ball is served to the plunger trough. Additional players may be added by depressing the Credit button before the end of ball 1.

The second closure (adjustable) 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 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. 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.

### **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 displays 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 AD02.

## GAME SPECIFIC FEATURES

---

### Skillshot

---

From plunger (1) shoot ball into one of three Flashing lanes (2) in Ramp.  
(See Display and Back Panel)

---

### Jackpot & Multiball (2 & 3)

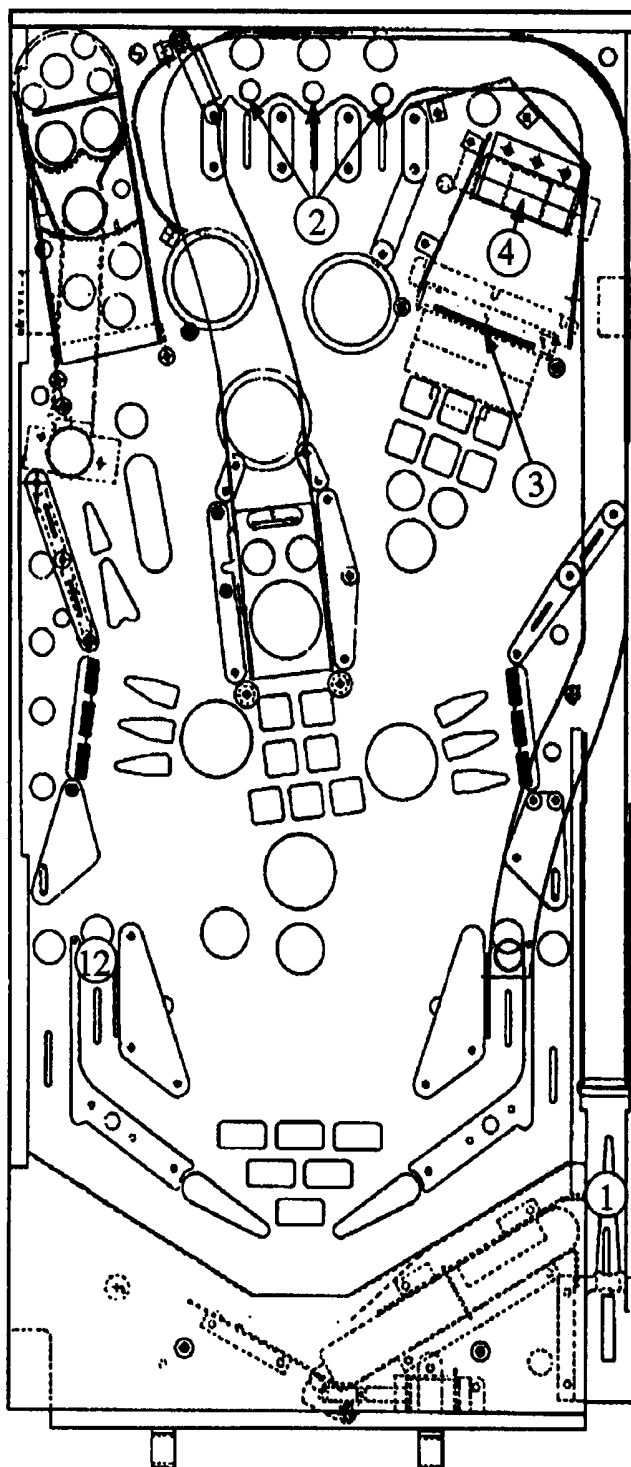
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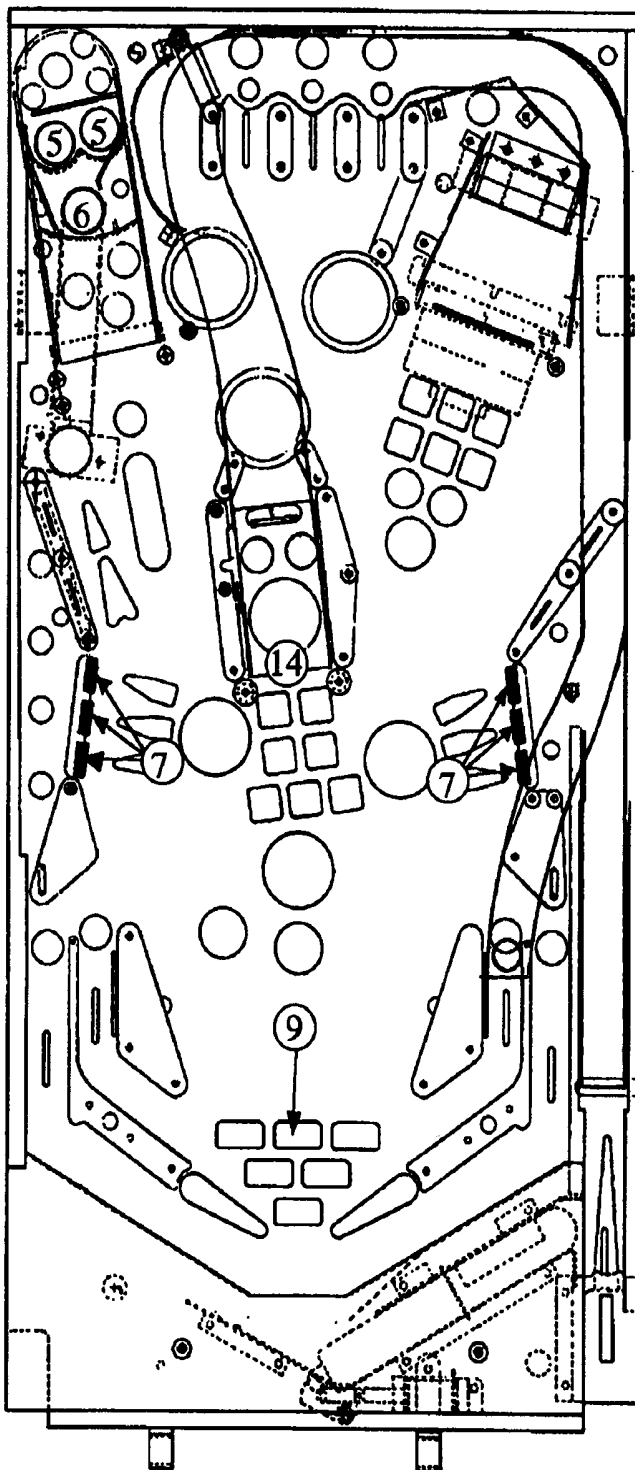
Complete **BATMAN** by shooting the Fugelheim Target (3).  
When completed the Target (3) will Drop.

Shoot a ball into the Museum (4) and a second ball will be automatically into play.-  
The ball in the Museum (4) will be shot back into play (2 Ball).

Shooting both balls Into the Museum will cause a third ball to come into Play. One shot into the Fugelheim Target (3) will lite the Museum (4) for Jackpot Award.  
(See Backglass for Values)

The Left Return Lane (12) to Fugelheim Target (3) Spots two Letters in BATMAN.






---

### **Joker Jump**

---

Shooting the Left & Right Eye (5) will lite the Mouth (6) for 4 Million Points or either Eye (5) for 2 Million.

---

### **Young Jack & Old Jack Targets**

---

Completing all six targets (7) scores 1,000,000 or 2,000,000 Points.

2,000,000 for completing the last target by striking it with a ball, 1,000,000 by shooting the the unlit Ramp to complete the last Target.  
(See Ramp)

---

### **Multiplier**

---

Completing the top three rollovers (8) increases the Players Bonus Multiplier.

For Bonus Status see the lights (9) located above the Flippers.

---

## Ramp

---

When a Ramp Value (13) is Lit, Shoot ramp (14) to collect the Lit Value.

Shooting the unlit Ramp (14) will spot one Old or New Jack Target

---

## Ramp Values

---

- 1 Million Points
- 100K Super Turbos - The player is awarded 100K per hit on any of three Turbo Bumpers (15).
- Lite Extra Ball - Extra Ball can be collected in Hole (11)
- Lite Fast Money - The player can collect 50K per switch by shooting any hole (5) or (6) when Fast Money is Lit.
- Instant 2-Ball
- 1 Million Plus - Shoot Ramp (14)
- 1st Shot awards 1 Million, 2nd shot 2 Million etc. until the countdown timer runs out.
- Maximum X Value - The Multiplier (9) will be set to Maximum for the current Ball in Play.

---

## Mystery Hole

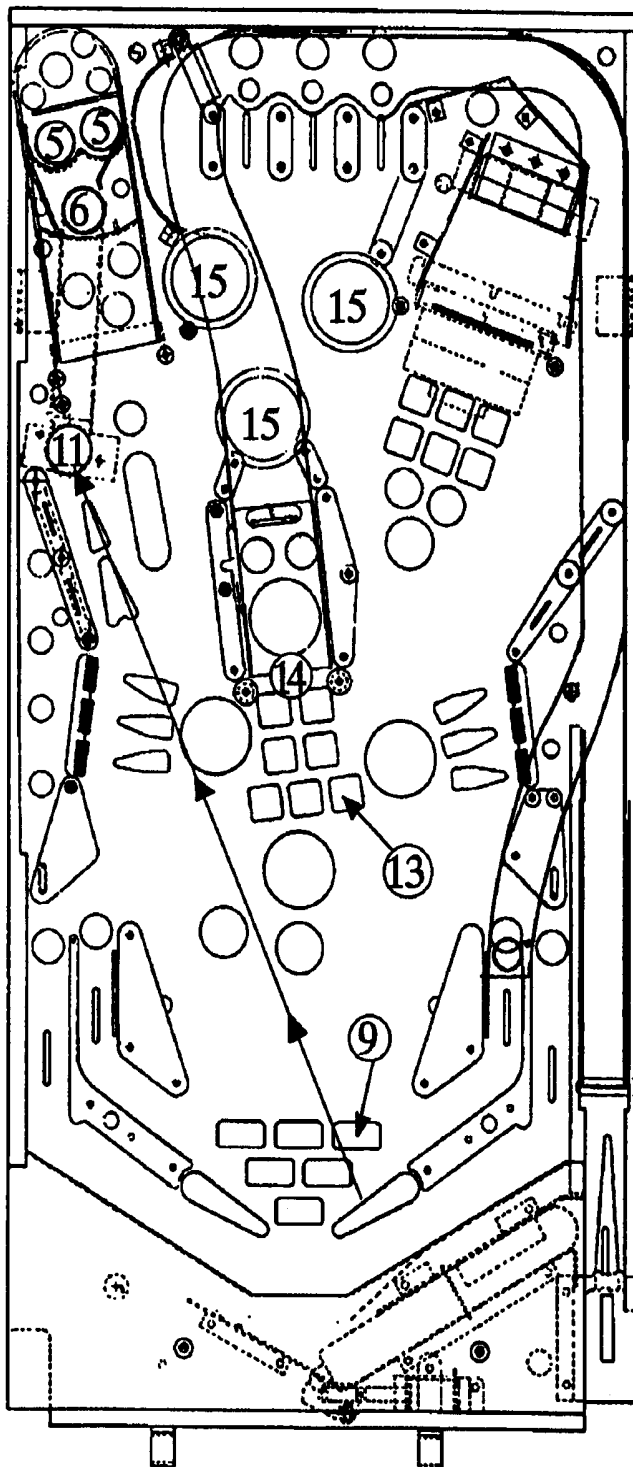
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Right Return lane (10) to Hole (11) awards a Mystery Value.

Shooting Hole (11) Spots one of seven Ramp Values (13).

Any shot into Hole (11) toggles the Ramp value (13).

Completing the Ramp Shot (14) awards the Lit Value (13).



# AUDIT FUNCTIONS

## GENERAL

There are 74 audit functions provided for accounting purposes and for evaluation of game difficulty adjustments. Audit functions are split into two groups. There are eight most-used audits (AU01 through AU08) in a 'quick look' group and 65 less-used audits (E AU10 through E AU74), in an 'expanded' group. The various auditing functions are summarized in the **AUDITING FEATURES TABLE** and, when accessed, are shown on the player score displays. The *Audit Number* is shown in the Player 3 Display, the *Description* in the Player 1 and 2 Displays, and the *Audit Total* in the Player 4 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 game name is shown in the Player 1 and 2 displays, the Player 3 display is blank, and the PROM revision level is shown in the Player 4 display. 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 AU09, EXPAND AUDITS is displayed. Set the choice to ON as indicated in the Player 4 display by depressing the Game Start push-button and then depress the step push-button. The request is installed and E AU10 is displayed. When you exit audits and adjustments, the AU09 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 **Ad11**, Audits Reset. Game adjustments (Ad01 to Ad13 and E Ad14 to E Ad45) begin after the last audit function (AU09 or E AU74). 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.

## 'QUICK LOOK' FUNCTIONS

**Total Paid Credits** (AU01) - the total number of paid credits is displayed.

**Free Percent** (AU02) is Free Total (E AU24) divided by Plays Total (E AU25).

**Ball Time Average** (in seconds) (AU03) is Total Play Time divided by Total Balls Played (AU10).

**Average Game Time** (AU04) is the Average Game Time expressed in minutes and seconds.

**Coins** (AU05, 06, and 07) - These three audit totals are provided to show the amount of coins registered for the left, right, and center coin chutes, respectively.

**Total Coins** (AU08) is the total number of coins dropped through all 3 coin chutes.

**Expand Audits** (AU09) permits viewing of expanded audits.

## Batman Audit Table

| Audit Number<br>(Player 3 Display) | Audit Description<br>(Players 1 & 2 Displays:<br>totals in Player 4 Display) | Audit Number<br>(Player 3 Display) | Audit Description<br>(Players 1 & 2 Displays:<br>totals in Player 4 Display) |
|------------------------------------|------------------------------------------------------------------------------|------------------------------------|------------------------------------------------------------------------------|
| AU 01                              | Batman PROM ID                                                               | E AU 38                            | Cycles H.S. Reset                                                            |
| AU 02                              | Total Paid Credits                                                           | E AU 39                            | Coins No Credit                                                              |
| AU 03                              | Free Percent                                                                 | E AU 40                            | Service Credits                                                              |
| AU 04                              | Ball Time Average                                                            | E AU 41                            | Total Tickets                                                                |
| AU 05                              | Game Time Average                                                            | E AU 42                            | Drains Left                                                                  |
| AU 06                              | Coins Left                                                                   | E AU 43                            | Drains Center                                                                |
| AU 07                              | Coins Right                                                                  | E AU 44                            | Drains Right                                                                 |
| AU 08                              | Coins Center                                                                 | E AU 45                            | Ramp Shots                                                                   |
| AU 09                              | Total Coins                                                                  | E AU 46                            | Skill Shots Made                                                             |
| E AU 10                            | Expand Audits (ON/OFF)                                                       | E AU 47                            | Young Jack Made                                                              |
| E AU 11                            | Balls Total                                                                  | E AU 48                            | Old Jack Made                                                                |
| E AU 12                            | Extra Balls Total                                                            | E AU 49                            | Spot Jack Target                                                             |
| E AU 13                            | Extra Ball Percent                                                           | E AU 50                            | 2 Ball Multiball                                                             |
| E AU 14                            | Replay 1 Awards                                                              | E AU 51                            | 3 Ball Multiball                                                             |
| E AU 15                            | Replay 2 Awards                                                              | E AU 52                            | Jackpot Lit                                                                  |
| E AU 16                            | Replay 3 Awards                                                              | E AU 53                            | Jackpot Award                                                                |
| E AU 17                            | Replay 4 Awards                                                              | E AU 54                            | Million Award                                                                |
| E AU 18                            | Total Replays                                                                | E AU 55                            | Super Bumps Award                                                            |
| E AU 19                            | Replay Percent                                                               | E AU 56                            | XBall Award                                                                  |
| E AU 20                            | Total Specials                                                               | E AU 57                            | Fast Money Award                                                             |
| E AU 21                            | Special Percent                                                              | E AU 58                            | Multiball Award                                                              |
| E AU 22                            | Total Matches                                                                | E AU 59                            | Loop Award                                                                   |
| E AU 23                            | Hi Score Wins                                                                | E AU 60                            | Mon. 10X Award                                                               |
| E AU 24                            | High Score Percent                                                           | E AU 61                            | 2X Made                                                                      |
| E AU 25                            | Total Free Plays                                                             | E AU 62                            | 4X Made                                                                      |
| E AU 26                            | Total Games                                                                  | E AU 63                            | 6X Made                                                                      |
| E AU 27                            | 0.0 - 0.9 Million                                                            | E AU 64                            | 8X Made                                                                      |
| E AU 28                            | 1.0 - 4.9 Million                                                            | E AU 65                            | 10X Made                                                                     |
| E AU 29                            | 5.0 - 9.9 Million                                                            | E AU 66                            | More Than 10X Made                                                           |
| E AU 30                            | 10.0 - 19.9 Million                                                          | E AU 67                            | VUK Mystery Scores                                                           |
| E AU 31                            | 20.0 - 29.9 Million                                                          | E AU 68                            | VUK Extra Ball                                                               |
| E AU 32                            | 30 Million Plus                                                              | E AU 69                            | Outlane Special Lit                                                          |
| E AU 33                            | Average Scores                                                               | E AU 70                            | Outlane Special Award                                                        |
| E AU 34                            | Games 1Player                                                                | E AU 71                            | Rerace Award                                                                 |
| E AU 35                            | Games 2Player                                                                | E AU 72                            | Bat Cave Special Lit                                                         |
| E AU 36                            | Games 3Player                                                                | E AU 73                            | Bat Cave Special Award                                                       |
| E AU 37                            | Games 4Player                                                                | E AU 74                            | # Of Victory Shots                                                           |
|                                    | Attract Minutes                                                              |                                    |                                                                              |

## EXPANDED FUNCTIONS

**Balls Total** (E AU10) is the total of regular and extra balls.

**Extra Balls Total** (E AU11) is the total number of extra balls awarded.

**Extra Ball Percentage** (AU12) is AU11 divided by Plays Total (AU25).

**Replay Awards** (E AU13 through 16) provide the total awards (credit, extra ball, or audit) for replay levels 1 through 4, respectively.

**Total Replays** (E AU17) is the total awards (credits, extra balls, or audit only) for exceeding replay score levels.

**Replay Percentage** (E AU18) is the Replay Total awards for exceeding replay score levels (E AU17) divided by Plays Total (E AU25).

**Total Specials** (E AU19) is the total awards (credits, extra balls, or scores) for making specials.

**Special Percentage** (E AU20) is Special Total (E AU19) divided by Plays total (E AU25).

**Match Total** (E AU21) is 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 E Ad 14 if enabled.

**High Score Wins** (E AU22) is the total credits awarded for exceeding the high-score-to-date scores.

**High Score Percentage** (E AU23) is High Score Wins (E AU22) divided by Plays Total (E AU25).

**Total Free Plays** (E AU24) is the total free credits for replays, high-score-to-date, specials, and match.

**Total Games** (E AU25) is the sum of Total Paid Credits (AU01) and Free Total (E AU24). Note that free credits are not recorded in the audits until they are actually used.

**0.0- 0.9 Million** (E AU26) provides the total number of games the Player's final score was between 0 and 999,990 points.

**1.0 - 4.9 Million** (E AU27) provides the total number of games the Player's final score was between 1,000,000 and 4,999,990 points.

**5.0 - 9.9 Million** (E AU28) provides the total number of games the Player's final score was between 5,000,000 and 9,999,990 points.

**10.0 - 19.9 Million** (E AU29) provides the total number of games the Player's final score was between 10,000,000 and 19,999,990 points.

**20.0 - 29.9 Million** (E AU30) provides the total number of games the Player's final score was between 20,000,000 and 29,999,990 points.

**30 Million Plus** (E AU31) provides the total number of games the Player's final score was over 30,000,000 points.

**Average Scores** (E AU32) provides the Average Score by adding the Final Score of each game to a table and dividing this sum by the Total Plays .

**Games - Player** (E AU33 through 36) provide individual totals of 1- player, 2-player, 3-player, and 4-player games, respectively.

**Attract Minutes** (E AU37) provides the number of minutes the game is in Attract Mode (Factory use).

**Cycles High Score Reset** (E AU38) provides the number of times that the high score levels have been automatically reset (if enabled).

**Coin No Credit** (E AU39) provides the number of times the coin switch was closed without awarding credit(s)-This option is used in multiple coin conditions.(ie. 2 quarters 1 Play)

**Service Credits** (E AU40) provides the total number of Service credits added to the game. See *Game Diagnostics* on page 19 for instructions regarding entry of Service Credits.

**Total Tickets** (E AU41) provides the total number of tickets dispensed.

**Drains Left** (E AU42) provides the number of times the ball drained out the left drain.

**Drains Center** (E AU43) provides the number of times the ball drained out the center drain.

**Drains Right** (E AU44) provides the number of times the ball drained out the right drain.

## **GAME SPECIFIC FUNCTIONS**

**Ramp Shots** (E AU45) provides the total number of times the Ramp was completed.

**Skill Shot Made** (E AU46) provides the total number of times the Skill Shot Feature was accomplished.(Note- the feature is enabled at the start of each new ball.)

**Young Jack Made** (E AU47) provides the total number of times the Right Standup Targets were completed.

**Old Jack Made** (E AU48) provides the total number of times the Left Standup Targets were completed.

**Spot Jack Target** (E AU49) provides the total number of times, one of the Jack Targets were Spotted by the Ramp Shot.

**2 Ball Multiball** (E AU50) provides the total number of times 2 Ball Multiball was achieved.

**3 Ball Multiball** (E AU51) provides the total number of times 3 Ball Multiball was achieved.

**Jackpot Lit** (E AU52) provides the total number of times the Jackpot feature was active during Multiball.

**Jackpot Award** (E AU53) provides the total number of times the Jackpot Feature awarded one of the lit values on the Backglass.

**Million Awards** (E AU54) provides the total number of times the Million Feature was awarded by completing the Ramp Shot when lit.

**Super Bumps Award** (E AU55) provides the total number of times the Super Bumps Feature was enabled by completing the Ramp Shot when lit.

**XBall Award** (E AU56) provides the total number of times the Extra Ball was enabled by completing the Ramp Shot when lit and then collected by shooting the Left VUK.

**Fast Money Award**(E AU57) provides the total number of times the Fast Money Feature was enabled by completing the Ramp Shot when lit and then collected by shooting the Joker's Face.

**Multiball Award** (E AU58) provides the total number of times the Multiball Feature was enabled by completing the Ramp Shot when lit.

**Loop Award** (E AU59) provides the total number of times the Looping Feature was enabled by completing the Ramp Shot when lit.

**Mon. 10X Award** (E AU60) provides the total number of times the 10X Bonus Feature was enabled by completing the Ramp Shot when lit.

**2X** (E AU61) provides the number of times 2X bonus was enabled.

**4X** (E AU62) provides the number of times 4X bonus was enabled.

**6X** (E AU63) provides the number of times 6X bonus was enabled.

**8X** (E AU64) provides the number of times 8X bonus was enabled.

**10X** (E AU65) provides the number of times 10X bonus was enabled.

**More Than 10X Made** (E AU66) provides the number of times, completing the Top 3 Lanes after 10X is enabled 500,000 points would be awarded.

**VUK Mystery Score** (E AU67) provides the number of times the Left VUK Mystery Score was awarded.

**VUK Extra Ball** (E AU68) provides the number of times the Left VUK Extra Ball was awarded.

**Outlane Special Lit**(E AU69) provides the total number of times the Outlane Special was lit by completing the shot from the right flipper return lane to the Left VUK during the 2nd or 3rd ball.

**Outlane Special Made**(E AU70) provides the total number of times the Lit Outlane awarded a Special.

**Rerace Award** (E AU71) provides the total number of times the Multiball Feature was re-enabled by the program. (Note- In the early stages of Multiball, a safety timer is used to re-establish the feature, should a ball exit prematurely.)

**Bat Cave Special Lit** ((E AU72) provides the total number of times the Bat Cave Special was lit. ( Note- The Bat Cave lites at random during the last ball of the game.)

**Bat Cave Special Made** ((E AU73) provides the total number of times the Bat Cave Special was awarded for completing the lit Ramp shot.

**# of Victory Shots** (E AU74) provides the number of times the game awarded 3 Million points, by completing the Ramp during Victory Mode.



# GAME ADJUSTMENTS

## GENERAL

There are 45 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 displays. The *Adjustment Number* is shown in the Player 3 Display, the *Description* in the Player 1 and 2 Displays, and the setting in the Player 4 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 game identification and the FORWARD/REVERSE switch in the REVERSE (down) position, depress the STEP switch and E Ad45 (Expanded Adjustment 45) is shown in the Player 3 display, FACTORY RESTORE is shown in the Player 1 & 2 displays, and OFF is shown in the Player 4 display. With the audits displaying AU09 (or expanded E AU74) and the FORWARD/REVERSE switch in the FORWARD (up) position, depress the STEP switch and Ad01 is shown in the Player 3 display, REPLAY MANUAL/FIXED is shown in the Player 1 and 2 displays, and the setting is shown in the Player 4 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 Player 1 and 2 displays indicate 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.)

## REPLAYS (Ad 01 through 06)

### Ad 01 Replay Manual/Fixed

- **Manual:** Adjust for percentage of awards for replay levels (1% through 50%). Proceed to Ad 02 and 03 for starting replay levels.
- **Fixed:** Lower the automatic value below 1% and Player 1 display indicates FIXED. Proceed to Ad 02 and 03 for fixed replay levels.

### Ad 02 Start Replay

- **Manual:** Adjust the starting Replay 1 setting to between 100,000 and 99,900,000.

### Ad 03 Levels Replay/Level 1,2,3 & 4 Replay

- Adjust the number of replay levels to be active (1 to 4). Any additional starting replay levels are automatically set to values higher than Replay 1
- Adjust Replay 1 level to between 100,000 and 99,900,000. (Same as Start Replay)
  - If Ad 03 is set for 2, adjust Replay 2 level to between 100,000 and 99,900,000.
  - If Ad 03 is set for 3, adjust Replay 3 level to between 100,000 and 99,900,000.
  - If Ad 03 is set for 4, adjust Replay 4 level to between 100,000 and 99,900,000.

# BATMAN

## Game Adjustment Table

| Adjustment<br>Number<br>(Player 3) | Description<br>(Players 1 & 2) | Factory Setting<br>(Player 4) |
|------------------------------------|--------------------------------|-------------------------------|
| Ad 01                              | Replay/Manual                  | 10%                           |
| Ad 02                              | Start Replay                   | 20,000,000                    |
| Ad 03                              | Levels Replay *                | 01                            |
| Ad 04                              | Game Awards                    | CREDIT                        |
| Ad 05                              | Limit Freegame                 | 03                            |
| Ad 06                              | Limit Extraball                | 03                            |
| Ad 07                              | Game Rules                     | FACTORY                       |
| Ad 08                              | Game Price*                    | USA2                          |
| Ad 09                              | Game Cleaned                   | NO                            |
| Ad 10                              | Coin Reset                     | NO                            |
| Ad 11                              | Audits Reset                   | NO                            |
| Ad 12                              | Restore H.S.T.D.               | NO                            |
| Ad 13                              | Expand Adjustments             | NO                            |
| E Ad 14                            | Match Percent                  | 08                            |
| E Ad 15                            | Balls Per Game                 | 03                            |
| E Ad 16                            | Tilt Warnings                  | 01                            |
| E Ad 17                            | Replay Boost                   | NO                            |
| E Ad 18                            | Credits Limit                  | 30                            |
| E Ad 19                            | High Scores Allowed            | YES                           |
| E Ad 20                            | Hiscore 1 Awards               | 03                            |
| E Ad 21                            | Hiscore 2 Awards               | 01                            |
| E Ad 22                            | Hiscore 3 Awards               | 00                            |
| E Ad 23                            | Hiscore 4 Awards               | 00                            |
| E Ad 24                            | Backup World Record            | 30,000,000                    |
| E Ad 25                            | Backup Hiscore 1               | 25,000,000                    |
| E Ad 26                            | Backup Hiscore 2               | 20,000,000                    |
| E Ad 27                            | Backup Hiscore 3               | 18,000,000                    |
| E Ad 28                            | Backup Hiscore 4               | 16,000,000                    |
| E Ad 29                            | Backup Hiscore 5               | 14,000,000                    |
| E Ad 30                            | Reset H.S.T.D. Every           | 700                           |
| E Ad 31                            | Clean Game Every               | 1500                          |
| E Ad 32                            | Free Play                      | NO                            |
| E Ad 33                            | Custom Mesage                  | ON                            |
| E Ad 34                            | Attract Mode Music             | ON                            |
| E Ad 35                            | Flash Lamps                    | NORMAL                        |
| E Ad 36                            | Coils Pulse                    | NORMAL                        |
| E Ad 37                            | Level Adjust By                | ANY                           |
| E Ad 38                            | Install Country                | USA                           |
| E Ad 39                            | Ticket Dispenser               | OFF                           |
| E Ad 40                            | # Tickets Per Award            | 1                             |
| E Ad 41                            | Outlane Toggle                 | BOTH                          |
| E Ad 42                            | Joker Timer                    | FACTORY                       |
| E Ad 43                            | Winners Circle                 | OFF                           |
| E Ad 44                            | Million Plus Loop Timer        | FACTORY                       |
| E Ad 45                            | Factory Restore                | OFF                           |

\* Some settings result in Drop-Down Tables- See Text

**Ad 04 Game Awards** Set for replays to award: **CREDIT, EXTRA BALL, NONE** or **SPECIAL** (when score threshold is achieved a playfield special is lit).

**Ad 05 Limit FreeGame** - Adjust for the maximum number of free games that may be accumulated per game; 0 to 9 .

**Ad 06 Limit Extra Balls** - Adjust for the maximum number of extra balls that may be accumulated per game; 1 to 9 or OFF.

## **SINGLE-FUNCTION DIFFICULTY ADJUSTMENT (Ad 07)**

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.

**Ad 07 Game Rules** - Set to **EXTRA EASY, EASY, FACTORY, HARD** or **EXTRA HARD**.

| <b>Install Adjustment</b>       | <b>E Ad07 Extra Easy</b> | <b>E Ad07 Easy</b> | <b>E Ad07 Factory</b> | <b>E Ad07 Hard</b> | <b>E Ad07 Extra Hard</b> |
|---------------------------------|--------------------------|--------------------|-----------------------|--------------------|--------------------------|
| E Ad 41 Outlane Toggle          | FLIPPER                  | BOTH               | BOTH                  | SLING              | SLING                    |
| E Ad 42 Joker Timer             | EXEASY                   | EASY               | FACTORY               | HARD               | EXHARD                   |
| E Ad 44 Million Plus Loop Timer | EXEASY                   | EASY               | FACTORY               | HARD               | EXHARD                   |
|                                 |                          |                    |                       |                    |                          |

## **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:

Ad 01 Manual Replay = Fixed  
Ad 02 Start Replay = 00  
Ad 03 Levels Replay = None  
Ad 04 Game Awards = None  
Ad 05 Limit Freegame = 0

Ad 06 Limit Extra Balls = 0  
E Ad 14 Match Percent = Off  
E Ad 20 World Record Awards = 0  
E Ad 21-23 Todays 1-3 Awards = 0

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

Ad 01 Manual Replay = 07%  
Ad 02 Replay Start = 30,000,000  
Ad 03 Replay Levels = 01  
Ad 04 Game Awards = Credit  
Ad 05 Limit Freegame = 3  
Ad 06 Limit Extra Balls = 3  
E Ad 14 Match Percent = 04

E Ad 15 Balls/Game = 5  
E Ad 20 World Record Awards = 3  
E Ad 21 Todays 1 Award = 1  
E Ad 41 Outlane Toggle = Slings  
E Ad 42 Joker Timer = Factory  
E Ad 43 Winners Circle = Off  
E Ad 44 Million Plus Loop Timer. = Hard

**Extra Ball Settings**-To disable awarding of credits and provide awards with an extra ball make the following adjustments:

Ad 04 Game Awards = Extra Ball  
Ad 05 Limit Freegame = 0  
E Ad 14 Match Percent = OFF

E Ad 19 Scores Highest = No  
E Ad 20 to 23 World Record & Todays High Awards = 0

## GAME PRICING (Ad 08)

There are two methods available for coin switch programming; Standard and Custom. Standard pricing uses a single adjustment (Ad 08) to select a pricing scheme shown in the **Standard /CustomPricing Table**. Custom pricing is used to select additional pricing schemes defined by a Drop Down menu .

With Ad 08 set to **CUSTOM** operating the step button again initiates a drop down menu representing coin switch pulses for the left, right, and center coin slots. The prescribes the number of pulses 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 in the Player 1 and 2 displays. 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.

**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 a bonus credit; 00 to 99.

## CUSTOM PRICING TABLE

| Coin Mechs |        |        | Plays/Coins                                      | Adjustments |        |         |       |           |          |
|------------|--------|--------|--------------------------------------------------|-------------|--------|---------|-------|-----------|----------|
| Left       | Right  | Center |                                                  | Ad08        | Left P | Right P | Mid P | Pulse/1Cr | Puls/bon |
| 25¢        | 25¢    | \$1.00 | 1/25¢ 3/50¢<br>1/25¢ 5/\$1.00<br>1/25¢/ 6/\$1.00 | Custom      | 01     | 01      | 04    | 01        | 02       |
|            |        |        |                                                  | Custom      | 01     | 01      | 04    | 01        | 04       |
|            |        |        |                                                  | Custom      | 05     | 05      | 20    | 04        | 20       |
| 5SCH       | 10SCH  | 10SCH  | 1/10 SCH<br>1/10 SCH 4/30SCH                     | Custom      | 01     | 02      | 02    | 02        | 00       |
|            |        |        |                                                  | Custom      | 04     | 08      | 08    | 06        | 00       |
| 20¢        | \$1.00 | --     | 1/20¢<br>1/60¢ 2/\$1.00                          | Custom      | 01     | 05      | 00    | 01        | 00       |
|            |        |        |                                                  | Custom      | 01     | 05      | 00    | 03        | 05       |
| 10P        | 10P    | 50P    | 1/10P 6/50P<br>1/20P 3/50P                       | Custom      | 01     | 01      | 05    | 01        | 05       |
|            |        |        |                                                  | Custom      | 01     | 01      | 05    | 02        | 05       |

# STANDARD PRICING TABLE

| Ad 08 Standard Pricing Select |         |                        | Coin Mechs |           |            | Plays/Coins                                                                       |                                                                    |                                                 |
|-------------------------------|---------|------------------------|------------|-----------|------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------|-------------------------------------------------|
| 1                             | 2       | 4                      | Left       | Center    | Right      | Left                                                                              | Center                                                             | Right                                           |
| USA1                          | 1COIN   | 1PLAY                  | 25¢        | \$1.00    | 25¢        | 1 PLAY/ 1COIN                                                                     | 4 PLAY/ 1COIN                                                      | 1 PLAY/ 1COIN                                   |
| USA2                          | 4 COINS | 3PLAYS                 | 25¢        | \$1.00    | 25¢        | 1 PLAY/ 2COIN<br>2 PLAY/ 3COIN<br>3 PLAY/ 4COIN                                   | 3 PLAY/ 1COIN                                                      | 1 PLAY/ 2COIN<br>2 PLAY/ 3COIN<br>3 PLAY/ 4COIN |
| USA3                          | 2 COINS | 1 PLAY                 | 25¢        | \$1.00    | 25¢        | 1 PLAY/ 2COIN                                                                     | 2 PLAY/ 1COIN                                                      | 1 PLAY/ 2COIN                                   |
| USA4                          | 2COINS  | 1 PLAY<br>1COIN BUY-IN | 25¢        |           | 25¢        | 2 COINS FOR THE 1st PLAY<br>1PLAY/ 1 COIN ONLY DURING BUY-IN                      |                                                                    |                                                 |
| AUSTRIA COINAGE               |         |                        | 5 SCH      | 10 SCH    | 10SCH      | 1 PLAY/ 2COIN<br>2 PLAY/ 3COIN<br>3 PLAY/ 4COIN                                   | 1 PLAY/ 1COIN<br>3 PLAY/ 2COIN                                     | 1 PLAY/ 1COIN<br>3 PLAY/ 2COIN                  |
| AUSTRALIA COINAGE             |         |                        | 20¢        | \$1.00    | \$2.00     | 1 PLAY/ 3COIN                                                                     | 2 PLAY/ 1 COIN                                                     | 4 PLAY/ 1COIN                                   |
| UK COINAGE                    |         |                        | 10P        | 50P       | £1         | 1 PLAY/ 3COIN                                                                     | 2 PLAY/ 1COIN                                                      | 5 PLAY/ 1COIN                                   |
| SWISS 1<br>SWISS 2            |         |                        | 1 SFR      | 2 SFR     | 5 SFR      | Same as German 1<br>Same as German 2                                              |                                                                    |                                                 |
| BELGIUM COINAGE               |         |                        | 20f        | 50f       | 20f        | 1 PLAY/ 1COIN                                                                     | 3 PLAY/ 1COIN                                                      | 1 PLAY/ 1COIN                                   |
| GERMAN 5DM<br>1               |         | 7 PLAYS                | 1DM        | 2DM       | 5DM        | 1 PLAY/ 1COIN                                                                     | 2 PLAY/ 1COIN                                                      | 7 PLAY/ 1COIN                                   |
| GERMAN 5DM<br>2               |         | 9 PLAYS                | 1DM        | 2DM       | 5DM        | 1 PLAY/ 1COIN<br>3 PLAY/ 2COIN<br>5 PLAY/ 3COIN<br>7 PLAY/ 4COIN<br>9 PLAY/ 5COIN | 3 PLAY/ 1COIN<br>7 PLAY/ 2COIN<br>10 PLAY/ 3COIN<br>14 PLAY/ 4COIN | 9 PLAY/ 1COIN                                   |
| NETHERLAND COINAGE            |         |                        | 1 Guilder  | 1 Guilder | 2.5Guilder | 1 PLAY/ 1COIN                                                                     | 1 PLAY/ 1COIN                                                      | 3 PLAY/ 1COIN                                   |
| SWEDEN COINAGE                |         |                        | 1KR        | 5KR       | 5KR        | 1 PLAY/ 3COIN<br>2 PLAY/ 5COIN                                                    | 2 PLAY/ 1COIN                                                      | 2 PLAY/ 1COIN                                   |
| FRANCE 1 COINAGE              |         |                        | 1f         | 5f        | 10f        | 1 PLAY/ 3COIN<br>2 PLAY/ 5COIN<br>1 PLAY/ 5COIN                                   | 2 PLAY/ 1COIN                                                      | 5 PLAY/ 1COIN                                   |
| FRANCE 2 COINAGE              |         |                        | 1f         | 5f        | 10f        | 1 PLAY/ 5COIN                                                                     | 1 PLAY/ 1COIN                                                      | 3 PLAY/ 1COIN                                   |
| ITALY COINAGE                 |         |                        | 500L       |           | 500L       | 1 PLAY/ 1COIN                                                                     |                                                                    | 1 PLAY/ 1COIN                                   |
| SPAIN COINAGE                 |         |                        | 25P        |           | 100P       | 1 PLAY/ 1COIN                                                                     |                                                                    | 5 PLAY/ 1COIN                                   |
| JAPAN COINAGE                 |         |                        |            |           | 100¥       |                                                                                   |                                                                    | 1 PLAY/ 1COIN<br>3 PLAY/ 2COIN                  |

## ADDITIONAL GENERIC FEATURES

**Ad 09 Game Cleaned** - When enabled (set to **YES**) the game cleaning counter will be reset to zero and Game Clean-Me Green light will go out when STEP is depressed. (Also see E Ad31.)

**Ad 10 Coin Reset** - When enabled (set to **YES**) all coin and paid credit totals will be reset to zero when STEP is depressed.

**Ad 11 Audits Reset** - When enabled (set to **YES**) all audit totals except for coins and paid credits will be reset to zero when STEP is depressed.

**Ad 12 Restore High Score** - When enabled (set to **YES**) the High Score Levels and associated initials will be restored to backup settings when STEP is depressed .

**Ad 13 Expand Adjustments** - When set to **NO**, depressing the STEP push-button advances directly to E Ad 45, 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.

**E Ad 14 Match Percent-** 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.

**E Ad 15 Balls Per Game** - Adjust the number of balls per game; **2** to **5**.

**E Ad 16 Tilt Warnings** - Adjust the number of plumb bob tilt switch closures before the ball in play is tilted; **1** to **3** or **OFF**.

**E Ad 17 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 player's final score (when the replay was awarded) for each following game, until the replays have all been played. At this time the previous level is resumed.

**E Ad 18 Credits Limit** - Adjust the maximum number of credits that may be posted; **4** to **50**.

## HIGH SCORE LEVELS (E Ad 19 through 30)

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.

**E Ad 19 Hiscores Allowed** - Set to enable or disable the four high score levels; **YES** or **NO**.

**E Ad 20 World Record** - Adjust the number of credits awarded for exceeding level 1 (the highest of the four levels); **0** to **5**.

**E Ad 21 Highscore 1 Award-** Adjust the number of credits awarded for exceeding level 1; **0** to **3**.

**E Ad 22 Highscore 2 Award** - Adjust the number of credits awarded for exceeding level 2; **0** to **2**.

**E Ad 23 Highscore 3 Award** - Adjust the number of credits awarded for exceeding level 3; **0** to **1**.

**E Ad 24 Backup World Record** - Adjust the score level to which the world record (the highest of the four levels) may be altered. This adjustment is not affected by E Ad30 (Factory Reset defaults to 7,500,000).

**E Ad 25 Backup Highscore 1** - Adjust the backup score level to which level 1 may be reset.

**E Ad 26 Backup Highscore 2-** Adjust the backup score level to which level 2 may be reset.

**E Ad 27 Backup Highscore 3-** Adjust the backup score level to which level 3 may be reset.

**E Ad 28 Backup Highscore 4-** Adjust the backup score level to which level 4 may be reset.

**E Ad 29 Backup Highscore 5-** Adjust the backup score level to which level 5 may be reset.

**E Ad 30 High Score Reset Every** - 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).

**E Ad 31 Clean Game Every-** Adjust the number of games in which the Clean Game message appears in Tech Alert to indicate the playfield needs cleaning. Adjustable from 100 to 2000.

**E Ad 32 Free Play** - When set to **YES**, no coins are required for games.

**E Ad 33 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 of the Player 1 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 display character. Repeat this procedure until the desired message is indicated in the Player 1 and 2 displays. At this time, depress the **STEP** push-button switch to advance to E Ad 34.

**E Ad 34 Attract Mode Music** - Set to **ON** (approximately every 3 minutes), or **OFF**.

**E Ad 35 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.

**E Ad 36 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.

**E Ad 37 Level Adjust by** - When set to **OPERATOR**, the Manual Percentage Replay Adjustment can only be altered with the front door open (see manual page 3). When set to **ANY**, the Manual Percentage Replay Adjustment will display the message "PRESS START TO CHANGE REPLAY LEVEL" on power up if a change is recommended, and anyone operating the replay button will initiate the change to the replay score.

**E Ad 38 Install Country-** Set to **USA**, **FRENCH** or **GERMAN**. Determines the default settings for the respective country for game pricing etc.

**E Ad 45 Factory Restore-**Depressing **STEP** without changing the value shown in the Player 4 Display locks in any custom message set with E Ad33 and returns the game to GameOver. Set the value to **ON** and depress **STEP** switch to revert all game adjustments to factory settings, clear the Custom Message and return to Game Over.

## **GAME SPECIFIC FEATURES (E Ad 39 TO E Ad 45)**

**E Ad 39 Ticket dispenser-** Set to **ON** or **OFF**. When set to **ON**, the game will dispense ticket(s) (optional) when each replay award levels is attained. When set to **OFF**, no tickets will be dispensed.

**E Ad 40 # Tickets per Award-** Set from 1 thru 5. The game will dispense the selected number of tickets for each award level.

**E Ad 41 Outlane Toggle-** Set to **FLIPPER**, **SLING** or **BOTH**. This feature controls how the lit Outlane Special will alternate from the left lane to the right. When set to **FLIPPER** operating either flipper button will cause the Special light to move from one lane to the other. When set to **SLING** operating either Slingshot switch will cause the Special light to move from one lane to the other. When set to **BOTH** operating either the Flipper or Slingshot switches will cause the Special light to move from one lane to the other.

**E Ad 42 Joker Timer-** Set to **EXEASY, EASY, FACTORY, HARD** or **EXHARD**. Determines how long the Joker feature remains enabled in seconds.

| <b>EXEASY</b> | <b>EASY</b> | <b>FACTORY</b> | <b>HARD</b> | <b>EXHARD</b> |
|---------------|-------------|----------------|-------------|---------------|
| 18 Seconds    | 16 Seconds  | 14 Seconds     | 12 Seconds  | 10 Seconds    |

**E Ad 43 Winners Circle-** Set to **YES** or **NO**. When set to **YES**, at the end of the game, in a multiplayer game, the higher scoring player will be highlighted on the display and receive an additional 20 seconds of unlimited balls. (This will allow the player to build up his score and attempt to gain replays etc.) When set to **NO** the game will end normally.

**E Ad 44 Million Plus Loop Timer-** Set to **EXEASY, EASY, FACTORY, HARD** or **EXHARD**. Determines how long the Millions Plus Loop feature remains enabled in seconds.

| <b>EXEASY</b> | <b>EASY</b> | <b>FACTORY</b> | <b>HARD</b> | <b>EXHARD</b> |
|---------------|-------------|----------------|-------------|---------------|
| 24 Seconds    | 22 Seconds  | 20 Seconds     | 18 Seconds  | 16 Seconds    |

# GAME DIAGNOSTICS

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 bad. When operation of a coil should close or open a switch and does not, the coil is considered bad. In Game over attract mode, bad 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 Player 3 & 4 Displays. For example, making the right coin switch during the Switch Test results in the switch functional name (RIGHT COIN) shown in the Player 1 and 2 Displays, the row (WHT-YEL) and column (GRN-BRN) wire color codes shown in the Player 3 display, and the switch number shown in the Player 4 display.

**BLK = Black**  
**BRN = Brown**  
**RED = Red**  
**ORN = Orange**  
**YEL = Yellow**

**GRN = Green**  
**BLU = Blue**  
**VIO = Violet**  
**GRY = Grey**  
**WHT = White**

## 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-AU 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 player displays will now indicate if there are any Bad Switches (Switches that are closed, that should not be or switches that have not been activated in 50 games) It also indicates if the game requires cleaning, based on the number set in E Ad 31.

## 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 Ad 11 or a Factory Restore E Ad 45.

## 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<br>(Player 1 & 2)                                                                                            | Sounds Produced                                                                                                                                                                                                   |
|--------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| LEFT SPEAKER<br>CENTER SPEAKER<br>RIGHT SPEAKER<br>VOICE ROM1 (Loc F6)<br>VOICE ROM2 (Loc F4)<br>MUSIC TEST (Sound ROM Loc F7) | Left Sine (Left Speaker Only)<br>Center Sine (All speakers)<br>Right Sine (Right Speaker Only)<br>"Did you ever dance with the devil in the pale moonlight?"<br>" Who are you? "<br>Level 1 Through Level 4 Music |

## 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 that the positive battery terminal is connected to the positive lead (CN1-pln 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**

Digital display utilizes an intelligent Dot Matrix Display Board. The purpose behind this board is to provide more information to the operator as well as displaying graphics to the player.

The board is controlled by a Z80A microprocessor and it's personality ROM . (Unique to the Game) . It receives Data, Reset & Clock information from the CPU Board via the ribbon cable and sends back Status and Busy signals to the CPU . This is to insure synchronized communication of both boards.

The Drivers for the rows and columns are provided on 3 surface mounted integrated circuits. U13 & U14 supply the anode power to the columns and U15 supplies the cathode power to the rows.

### **Automatic Test**

To enter Display tests, operate the STEP push-button switch from the Sound Manual test. The displays will first illuminate all dots in the entire Display. After a slight delay it will cycle one column from left to right. After a period of time, it will begin the Row test by lighting the top 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 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. The test concludes with the words "DOT MATRIX LIVES". ( Please Note- these tests may be interrupted at any time by operating the STEP push-button switch to advance to the next test.

### **Museum Motor Test**

This Game has a feature which lowers a Target Switch (Museum) to allow a shot to the VUK below the playfield. The motor on this mechanism is controlled by a relay driven by Q23 on the CPU and there are 2 Limit switches ( Museum motor Up & Museum Motor Down) used by the CPU to determine the status of the Museum Motor.

After entering this test, press and hold the game's Start Button. This will cause the relay to pulse repeatedly as long as the Button is depressed. At the same time you will notice that the switch status (ON & OFF) will be indicated in both the upper and lower portions of the display (Museum motor Up & Museum Motor Down). The appropriate switch should be closed just prior to the limit of the Museum Motor Mechanism and both switches should not be closed (ON) at the same time.

This test is located before the Switch Tests so the technician can move the mechanism until both switches read OFF. This will help eliminate erroneous readings while trying to trace a problem during Active Switch Test.

## Switches

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. Row and column wire colors are indicated in each test using corresponding resistor color code numbers.

### Switch Test

From the Display Manual test, operate STEP push-button switch. Player 1 and 2 displays indicate SWITCH TEST. Close each switch and observe the displays. The Player 1 and 2 displays will indicate the switch name, the Player 3 display indicates the row and column wire colors, and the Player 4 display indicates 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

Operate the STEP push-button switch from the Switch Test. Player 1 and 2 Displays indicate ACTIVE SWITCHES. If any switches are stuck closed (or made from the presence of a ball), the Player 1 and 2 displays sequence through switch names, the Player 3 display indicates the row and column wire colors, and the switch numbers are indicated in the Player 4 display. This cycle continues until all switches are cleared or until the STEP push-button switch is depressed.

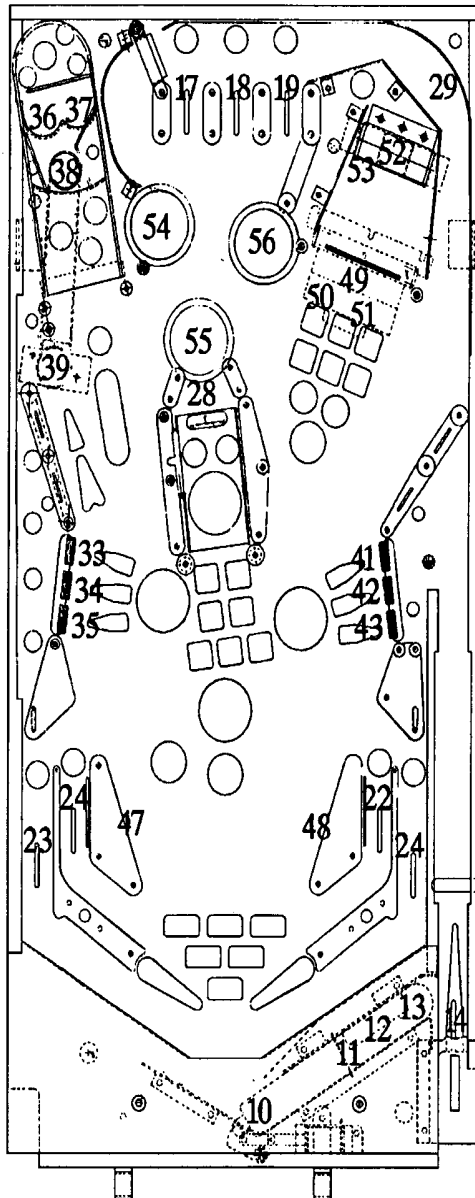
## SWITCH MATRIX CHART

| COLUMN<br>ROW          | 1 Q55<br>GRN-BRN<br>CN8-1 | 2 Q54<br>GRN-RED<br>CN8-2 | 3 Q53<br>GRN-ORN<br>CN8-3 | 4 Q52<br>GRN-YEL<br>CN8-4 | 5 Q51<br>GRN-BLK<br>CN8-5   | 6 Q50<br>GRN-BLU<br>CN8-7    | 7 Q49<br>GRN-VIO<br>CN8-8    | 8 Q48<br>GRN-GRY<br>CN8-9 |
|------------------------|---------------------------|---------------------------|---------------------------|---------------------------|-----------------------------|------------------------------|------------------------------|---------------------------|
| 1<br>WHT-BRN<br>CN10-9 | Plumb<br>Tilt 1           | Not Used 9                | Left<br>Top<br>Lane 17    | Not Used 25               | Left<br>3 Bank<br>Top 33    | Right<br>3 Bank<br>Top 41    | Bat<br>Bar<br>StandUP49      | Not Used 57               |
| 2<br>WHT-RED<br>CN10-8 | Not Used 2                | Outhole 10                | Center<br>Top<br>Lane 18  | Not Used 26               | Left<br>3 Bank<br>Middle 34 | Right<br>3 Bank<br>Middle 42 | Museum<br>Motor<br>Up 50     | Not Used 58               |
| 3<br>WHT-ORN<br>CN10-7 | Credit<br>Button 3        | Trough<br>#1<br>Left 11   | Right<br>Top<br>Lane 19   | Not Used 27               | Left<br>3 Bank<br>Bottom 35 | Right<br>3 Bank<br>Bottom 43 | Museum<br>Motor<br>Down 51   | Not Used 59               |
| 4<br>WHT-YEL<br>CN10-6 | Right<br>Coin 4           | Trough<br>#2<br>Center 12 | Not Used 20               | Ramp<br>Entrance 28       | Joker<br>Left<br>Eye 36     | Not Used 44                  | Right<br>VUK<br>Top 52       | Not Used 60               |
| 5<br>WHT-GRN<br>CN10-5 | Center<br>Coin 5          | Trough<br>#3<br>Right 13  | Left<br>Return 21         | Ramp<br>Exit 29           | Joker<br>Right<br>Eye 37    | Not Used 45                  | Right<br>VUK<br>Bottom 53    | Not Used 61               |
| 6<br>WHT-BLU<br>CN10-3 | Left<br>Coin 6            | Shooter<br>Lane 14        | Right<br>Return 22        | Not Used 30               | Joker<br>Mouth 38           | Not Used 46                  | Left<br>Turbo<br>Bumper 54   | Not Used 62               |
| 7<br>WHT-VIO<br>CN10-2 | Slam<br>Tilt 7            | Left<br>EOS 15            | Left<br>Outlane 23        | Not Used 31               | Left<br>VUK 39              | Left<br>Slingshot 47         | Center<br>Turbo<br>Bumper 55 | Not Used 63               |
| 8<br>WHT-GRY<br>CN10-1 | Not Used 8                | Right<br>EOS 16           | Right<br>Outlane 24       | Not Used 32               | Not Used 40                 | Right<br>Slingshot 48        | Right<br>Turbo<br>Bumper 56  | Not Used 64               |

## Batman - Switch Part Numbers

| Number | Description   | Part No.    | Number | Description             | Part No.    |
|--------|---------------|-------------|--------|-------------------------|-------------|
| 01*    | Plumb Tilt    | See Cabinet | 10     | Out Hole                | 180-5011-00 |
| 02     | Not Used      | -           | 11     | Trough #1 (Left)        | 180-5009-00 |
| 03*    | Credit Button | 500-5097-02 | 12     | Trough #2 (Center)      | 180-5009-00 |
| 04*    | Right Coin    | 180-5024-00 | 13     | Trough #3 (Right)       | 180-5010-00 |
| 05*    | Center Coin   | 180-5024-00 | 14     | Shooter Lane            | 500-5303-00 |
| 06*    | Left Coin     | 180-5024-00 | 15*    | Left Flip. Cab. Switch  | 180-5067-00 |
| 07*    | Slam Tilt     | 180-5022-00 | 16*    | Right Flip. Cab. Switch | 180-5067-00 |
| 08     | Not Used      | -           | 17     | Left Top Lane           | 515-5138-00 |
| 09     | Not Used      | -           | 18     | Center Top Lane         | 515-5138-00 |
|        |               |             | 19     | Right Top Lane          | 515-5138-00 |
|        |               |             | 20     | Not Used                | -           |
|        |               |             | 21     | Left Return Lane        | 515-5138-00 |
|        |               |             | 22     | Right Return Lane       | 500-5142-00 |
|        |               |             | 23     | Left Outlane            | 500-5142-00 |
|        |               |             | 24     | Right Outlane           | 500-5142-00 |
|        |               |             | 25     | Not Used                | -           |
|        |               |             | 26     | Not Used                | -           |
|        |               |             | 27     | Not Used                | -           |
|        |               |             | 28     | Ramp Entrance           | 180-5085-00 |
|        |               |             | 29     | Ramp Exit               | 180-5085-00 |
|        |               |             | 30     | Not Used                | -           |
|        |               |             | 31     | Not Used                | -           |
|        |               |             | 32     | Not Used                | -           |
|        |               |             | 33     | Left Bank Top           | 515-5124-13 |
|        |               |             | 34     | Left Bank Middle        | 515-5124-13 |
|        |               |             | 35     | Left Bank Bottom        | 515-5124-13 |
|        |               |             | 36     | Joker Left Eye          | 180-5010-00 |
|        |               |             | 37     | Joker Right Eye         | 180-5010-00 |
|        |               |             | 38     | Joker Mouth             | 180-5010-00 |
|        |               |             | 39     | Left VUK                | 180-5072-00 |
|        |               |             | 40     | Not Used                | -           |
|        |               |             | 41     | Right 3 Bank Top        | 515-5124-13 |
|        |               |             | 42     | Right 3 Bank Middle     | 515-5124-13 |
|        |               |             | 43     | Right 3 Bank Bottom     | 515-5124-13 |
|        |               |             | 44     | Not Used                | -           |
|        |               |             | 45     | Not Used                | -           |
|        |               |             | 46     | Not Used                | -           |
|        |               |             | 47     | Left Slingshot Sw. (2)  | 180-5054-00 |
|        |               |             | 48     | Right Slingshot Sw. (2) | 180-5054-00 |
|        |               |             | 49     | Bat Bar StandupTarget   | 515-5262-00 |
|        |               |             | 50     | Museum Motor Up         | 180-5052-00 |
|        |               |             | 51     | Museum Motor Down       | 180-5052-00 |
|        |               |             | 52     | Right VUK Top           | 180-5072-00 |
|        |               |             | 53     | Right VUK Bottom        | 180-5072-00 |
|        |               |             | 54     | Bumper Left             | 180-5015-00 |
|        |               |             | 55     | Bumper Center           | 180-5015-00 |
|        |               |             | 56     | Bumper Right            | 180-5015-00 |
|        |               |             | 57     | Not Used Through 64     |             |

\* Indicates Cabinet Switches



**Switch Locations**

## 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. Player 1 and 2 displays indicate ALL LAMPS and all controlled lamps will light.

### Lamp Returns

From the ALL LAMPS test, depress the STEP push-button switch. The top display indicates LAMP RETURNS and the Bottom display indicates 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

From the LAMP RETURNS test, depress the STEP push-button switch. The Top display indicates LAMP COLUMNS and the bottom display indicates 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

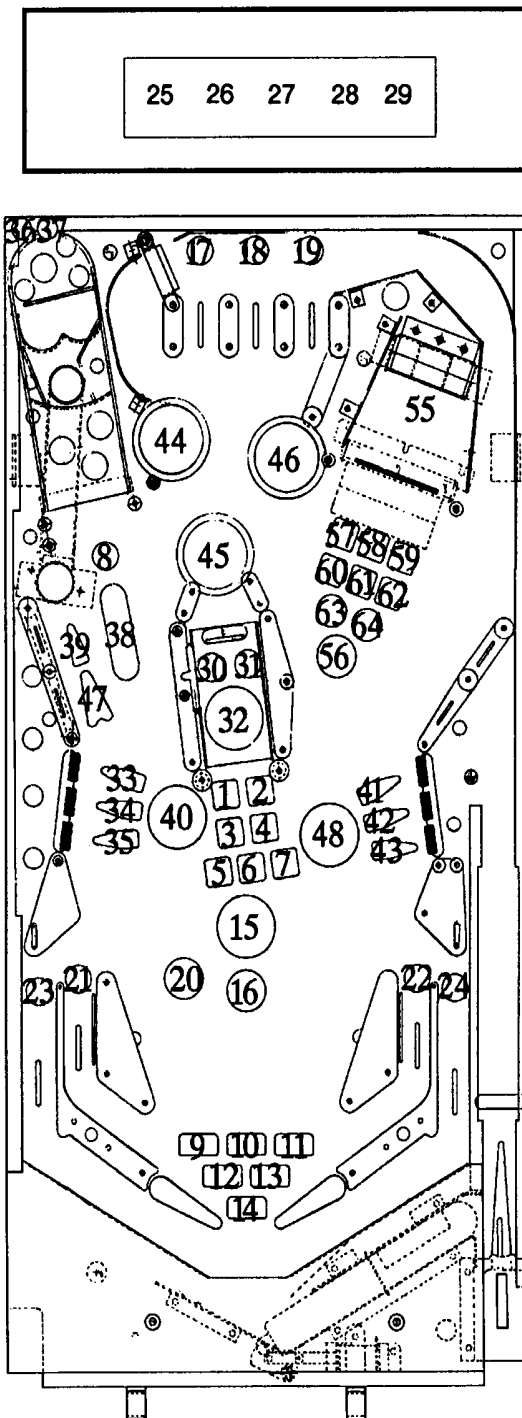
From the LAMP DRIVES test, depress the STEP push-button switch. The top display indicates lamp name. The bottom display indicates the row and column wire colors and the lamp matrix number. Lamp 01 should light. With the FORWARD/REVERSE push-button switch in the FORWARD (up) position, operating the Game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

## LAMP MATRIX CHART

| ROW \ COLUMN              | 1 Q71<br>YEL-BRN<br>CN7-1 | 2 Q70<br>YEL-RED<br>CN7-2 | 3 Q69<br>YEL-ORN<br>CN7-3 | 4 Q68<br>YEL-BLK<br>CN7-4 | 5 Q67<br>YEL-GRN<br>CN7-6 | 6 Q66<br>YEL-BLU<br>CN7-7 | 7 Q65<br>YEL-VIO<br>CN7-8 | 8 Q64<br>YEL-GRY<br>CN7-9 |
|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|---------------------------|
| 1 Q72<br>RED-BRN<br>CN6-1 | 1 Million 1               | Bottom 2X 9               | Left Toplane 17           | Backpanel Left 25         | Left 3 Bank Top 33        | Right 3 Bank Top 41       | Ramp Diverter 49          | BATMAN 57                 |
| 2 Q73<br>RED-BLK<br>CN6-2 | Super Bumps 2             | Bottom 4X 10              | Center Toplane 18         | Backpanel Center 26       | Left 3 Bank Middle 34     | Right 3 Bank Middle 42    | Insert-Moon 50            | BATMAN 58                 |
| 3 Q74<br>RED-ORN<br>CN6-3 | Lite Extra Ball 3         | Bottom 6X 11              | Right Toplane 19          | Backpanel Right 27        | Left 3 Bank Bottom 35     | Right 3 Bank Bottom 43    | Insert-5 Million 51       | BATMAN 59                 |
| 4 Q75<br>RED-YEL<br>CN6-5 | Fast Money 4              | Bottom 8X 12              | Playfield Moon 20         | Backpanel 500K 28         | Joker Left Eye 36         | Left Bumper 44            | Insert-15 Million 52      | BATMAN 60                 |
| 5 Q76<br>RED-GRN<br>CN6-6 | Instant 2 Ball 5          | Bottom 10X 13             | Left Return 21            | Backpanel XBall 29        | Joker Right Eye 37        | Center Bumper 45          | Insert-10 Million 53      | BATMAN 61                 |
| 6 Q77<br>RED-BLU<br>CN6-7 | Million Plus 6            | Shoot Again 14            | Right Return 22           | Double Score 30           | Joker 2 Million 38        | Right Bumper 46           | Cab.-Start Button 54      | BATMAN 62                 |
| 7 Q78<br>RED-VIO<br>CN6-8 | Max X Value 7             | Batman's Head 15          | Left Outlane 23           | Under Ramp XBall 31       | Left VUK XBall 39         | Spot Bat Monitor 47       | Museum Bat Symbol 55      | Lockball #1 63            |
| 8 Q79<br>RED-GRY<br>CN6-9 | Spot Fast Money 8         | Batman's Chest 16         | Right Outlane 24          | 3 Million 32              | Left 3 Bank Done 40       | Right 3 Bank Done 48      | Jackpot Lit 56            | Lockball #2 64            |

| Lamp Number | Description     |
|-------------|-----------------|
| 01.         | 1 Million       |
| 02.         | Super Bumps     |
| 03.         | Lite Xball      |
| 04.         | Fast Money      |
| 05.         | Instant 2 Ball  |
| 06.         | Million Plus    |
| 07.         | Max X Value     |
| 08.         | Spot Fast Money |
| 09.         | Bottom 2X       |

|      |                     |
|------|---------------------|
| 10.  | Bottom 4X           |
| 11.  | Bottom 6X           |
| 12.  | Bottom 8X           |
| 13.  | Bottom 10X          |
| 14.  | Shoot Again         |
| 15.  | Batman's Head       |
| 16.  | Batman's Chest      |
| 17.  | Left Toplane        |
| 18.  | Center Toplane      |
| 19.  | Right Toplane       |
| 20.  | Playfield Moon      |
| 21.  | Left Return Lane    |
| 22.  | Right Return Lane   |
| 23.  | Left Outlane        |
| 24.  | Right Outlane       |
| 25.* | Backpanel Left      |
| 26.* | Backpanel Center    |
| 27.* | Backpanel Right     |
| 28.* | Backpanel 500K      |
| 29.* | Backpanel XBall     |
| 30.  | Double Score        |
| 31.  | Under Ramp XBall    |
| 32.  | 3 Million           |
| 33.  | Left 3 Bank Top     |
| 34.  | Left 3 Bank Middle  |
| 35.  | Left 3 Bank Bottom  |
| 36.  | Joker Left Eye      |
| 37.  | Joker Right Eye     |
| 38.  | Joker 2 Million     |
| 39.  | Left VUK Extra Ball |
| 40.  | Left 3 Bank Done    |
| 41.  | Right 3 Bank Top    |
| 42.  | Right 3 Bank Middle |
| 43.  | Right 3 Bank Bottom |
| 44.  | Left Bumper         |
| 45.  | Center Bumper       |
| 46.  | Right Bumper        |
| 47.  | Spot Bat Monitor    |
| 48.  | Right 3 Bank Done   |
| 49.  | Ramp Diverter       |
| 50.* | Insert-Moon (2)     |
| 51.* | Insert-5 Million    |
| 52.* | Insert-15 Million   |
| 53.* | Insert-10 Million   |
| 54.  | Cab.-Start Button   |
| 55.  | Museum Bat Symbol   |
| 56.  | Jackpot Lit         |
| 57.  | BATMAN              |
| 58.  | BATMAN              |
| 59.  | BATMAN              |
| 60.  | BATMAN              |
| 61.  | BATMAN              |
| 62.  | BATMAN              |
| 63.  | Lock Ball #1        |
| 64.  | Lock Ball #2        |



Lamp Locations

\* Indicates Insert Panel or Backpanel Lamps

## 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. Player 1 and 2 displays indicate ALL COILS. The test pulses each regular solenoid or flash lamp sequentially with the coil/flash lamp name indicated in the Player 1 and 2 displays and the wire colors in the Player 3 and 4 displays.

### Select Coil

From the Coil Test, depress the STEP push-button switch. Player 1 and 2 displays indicate SELECT COIL and then the name of 1st drive, the wire colors are indicated in the Player 3 and 4 displays. Operate either Flipper push-button switch to select the coil or flash lamp to be tested. With the desired drive number indicated in the Player 4 display, depress the START push-button switch to cause it to be pulsed repeatedly.

## RETURN TO GAME OVER

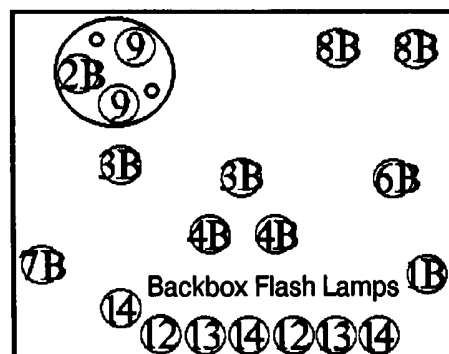
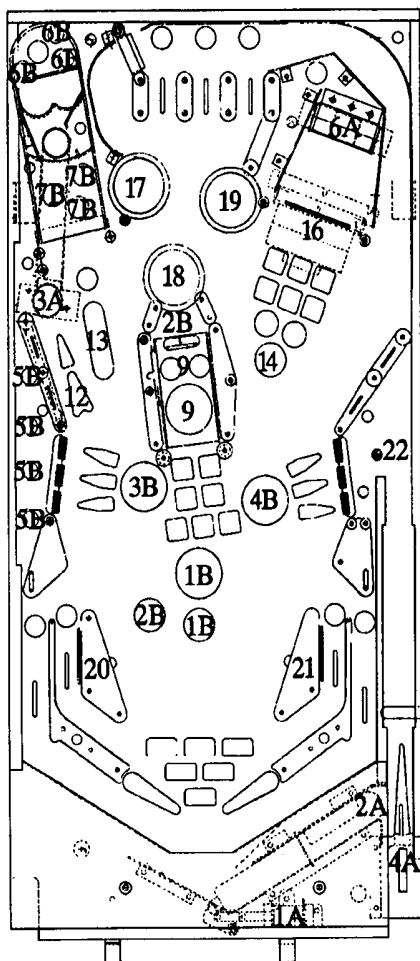
From the Select Coil test, depress the STEP push-button switch once. The game returns to the game-over mode.

### CPU Controlled Auxillary Solenoids

| Coil Number | Coil Description              | Control Line (CPU to Coil) | Power Line (PS to Coil) | Drive Transistor | Coil Type |
|-------------|-------------------------------|----------------------------|-------------------------|------------------|-----------|
| 17          | Left Turbo Bumper             | BLU-ORN<br>CPU CN19-3      | RED<br>PS CN3-6         | Q8               | 23-800    |
| 18          | Center Turbo Bumper           | BLU-RED<br>CPU CN19-4      | RED<br>PS CN3-6         | Q9               | 23-800    |
| 19          | Right Turbo Bumper            | BLU-YEL<br>CPU CN19-6      | RED<br>PS CN3-6         | Q10              | 23-800    |
| 20          | Left Slingshot                | BLU-BRN<br>CPU CN19-7      | RED<br>PS CN3-6         | Q11              | 23-800    |
| 21          | Right Slingshot               | BLU-GRN<br>CPU CN19-8      | RED<br>PS CN3-6         | Q12              | 23-800    |
| 22          | Motor Circuit (See Schematic) | CPU CN19-9                 | PS CN3-6                | Q13              | -         |

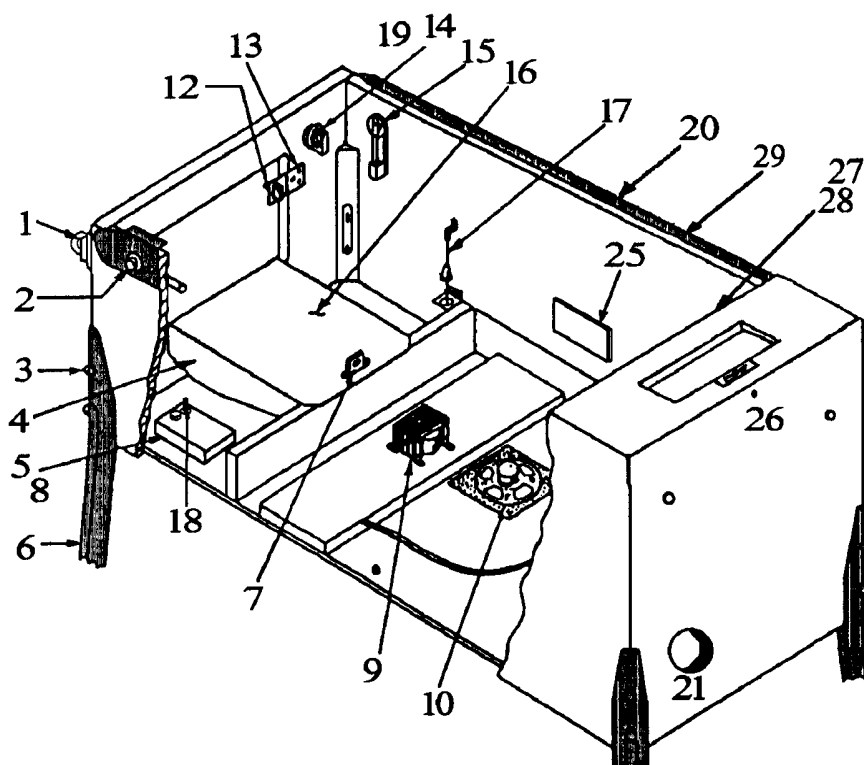
### Flipper Solenoids

| Coil Description | Flipper GND<br>CPU to Coil | Sw. to Flip.PCB  | Power Lines<br>FlipPc to Coil | Coil Type | Power Input<br>To Flip PCB |
|------------------|----------------------------|------------------|-------------------------------|-----------|----------------------------|
| Left Flipper     | ORN-GRY<br>CPU CN19-2      | BLU-GRY<br>CN1-9 | GRY-YEL<br>CN2-1,2            | 23-800    | BLK-WHT<br>50VDC           |
| Right Flipper    | ORN-VIO<br>CPU CN19-1      | BLU-VIO<br>CN1-1 | BLK-WHT<br>CN1-1              | 23-800    | GRY, GRY-GRN<br>8VAC       |



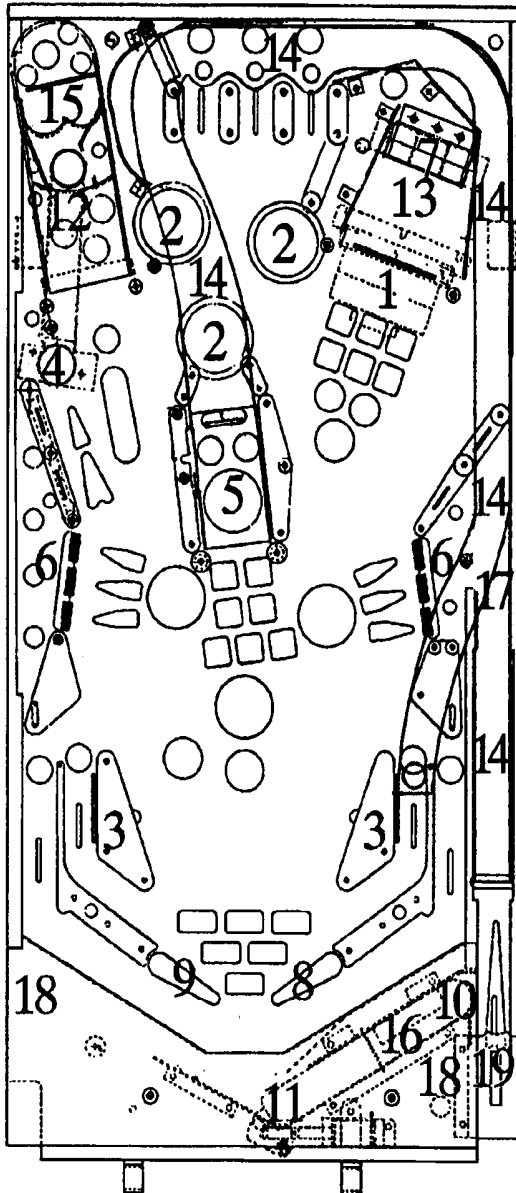


# CABINET PARTS ILLUSTRATION



| Item | Description                                | Part No.       |
|------|--------------------------------------------|----------------|
| 1    | Ball-Shooter Assy                          | 500-5409-06-04 |
| 2    | Flipper Button                             | 500-5026-16    |
| 3    | Leg Bolt (Black)                           | 231-5000-01    |
| 4    | Cash Box Bottom                            | 545-5090-00    |
| 5    | On/Off Switch DP/ST                        | 180-5001-00    |
| 6    | Leg (Black)                                | 535-5020-30    |
| 7    | Lock Bracket-Cash Box                      | 535-5215-00    |
| 8    | Power Input Box Assy                       | 515-5360-00-10 |
| 9    | Transformer                                | 010-5003-00    |
| 10   | Speaker-Round (6")                         | 031-5000-00    |
| 11   | Side Armor-Right(Not Shown)                | 535-5010-31    |
| 12   | Memory Protect Switch                      | 180-5000-00    |
| 13   | Memory Protect Switch Bracket              | 535-5225-01    |
| 14   | Start Switch Assembly                      | 500-5407-06    |
| 15   | Flipper Micro Switch                       | 180-5048-01    |
| 16   | Cash Box Top                               | 535-5013-01    |
| 17   | Plumb Bob Tilt Assembly                    | 500-5023-00    |
| 18   | Volume Control                             | 123-5000-00    |
| 19   | Playfield Glass (Tempered)                 | 660-5001-00    |
| 20   | Side Armor -Left                           | 535-5010-32    |
| 21   | Recessed cup for Line cord                 | 545-5122-00    |
| 22   | Service Switch (Not Shown)                 | 180-5012-00    |
| 23   | Front Molding Lockdown Assy.               | 500-5020-00    |
| 24   | Front Molding -Black (Not Shown)           | 500-5021-10    |
| 25   | S.S.Flipper P.C.B.                         | 520-5033-00    |
| 26   | Roto Lock Bottom                           | 355-5006-01    |
| 27   | Rear Plastic Extrusion for Playfield Glass | 545-5038-00    |
| 28   | Mounting Foam for Extrusion                | 626-5004-00    |
| 29   | Plastic Channel (Right & Left)             | 545-5017-00    |

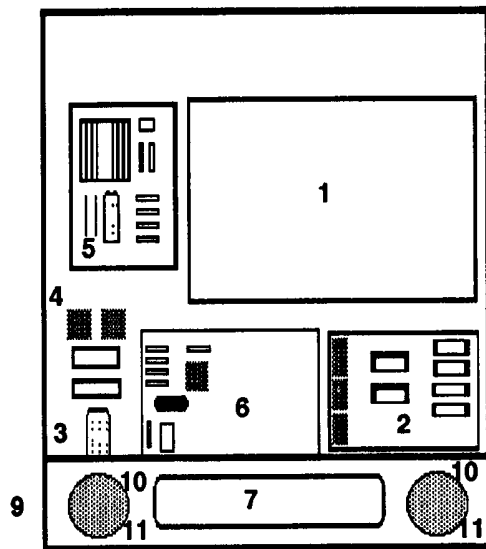
## Playfield - Major Assemblies



| Item | Description           | Part Number    |
|------|-----------------------|----------------|
| 1.   | Up Down Target        | 500-5386-00-11 |
| 2.   | Pop Bumper            | 500-5227-00    |
| 3.   | Sling Shot            | 500-5226-00    |
| 4.   | Super VUK             | 500-5116-04    |
| 5.   | Bat Cave              | 545-5281-00    |
| 6.   | 3 Bank Standup Target | 500-5384-03    |
| 7.   | Super VUK             | 500-5116-03    |
| 8.   | Flipper Assy Right    | 500-5177-71    |
| 9.   | Flipper Assy Left     | 500-5177-72    |
| 10.  | Ball Trough eject     | 500-5012-01    |
| 11.  | Outhole Kicker        | 500-5082-00    |
| 12.  | Joker Chute Assy.     | 535-5929-00    |
| 13.  | Up Down Chute Assy.   | 515-5400-00    |
| 14.  | Plastic Ramp Assy.    | 500-5385-00-11 |
| 15.  | Joker Ramp Assy.      | 500-5388-00-11 |
| 16.  | Ball Trough Assy.     | 500-5044-00    |
| 17.  | Ball Diverter         | 535-6116-00    |
| 18.  | Bottom Arch           | 545-5170-00    |
| 19.  | Turbo Kicker          | 500-5406-00    |

Individual part breakdowns for most of these assemblies can be found on pages 35 through 41 and 63 & 64.

## BACKBOX PARTS ILLUSTRATION



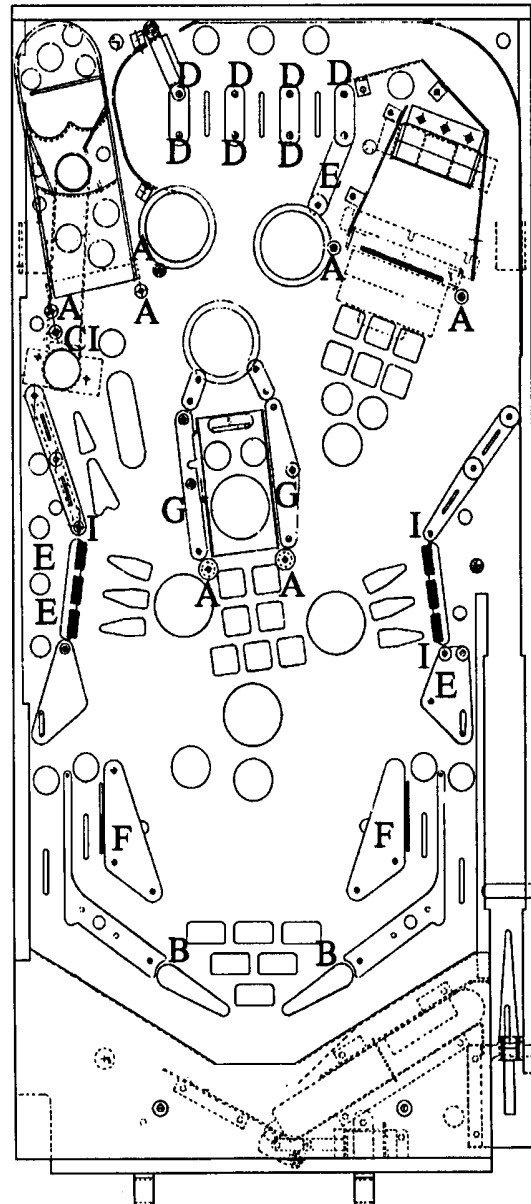
| Item | Description                 | Part No.       |
|------|-----------------------------|----------------|
| 1    | CPU Board Assy.(Non-Reflex) | 520-5003-03 †  |
| 2    | Sound Board Assy            | 520-5050-00 †  |
| 3    | Capacitor 2C1               | 125-5000-00    |
| 4    | Bridge Rectifiers           | 112-5000-00    |
| 5    | Power Supply Bd. Assy       | 520-5047-00    |
| 6    | PPB Board                   | 520-5021-04    |
| 7    | Dot Matrix Display Bd       | 520-5042-00 †  |
| 8    | Display Ribbon Cable*       | 036-5000-24-10 |
| 9    | Speaker Housing             | 500-5416-00-10 |
| 10   | Speakers (2)                | 031-5004-00    |
| 11   | Speaker Grill (2)           | 830-5604-00    |
| 12   | Back Box Glass*             | 830-5211-00    |
| 13   | Roto-Lock Top*              | 355-5006-02    |

\* Not Shown

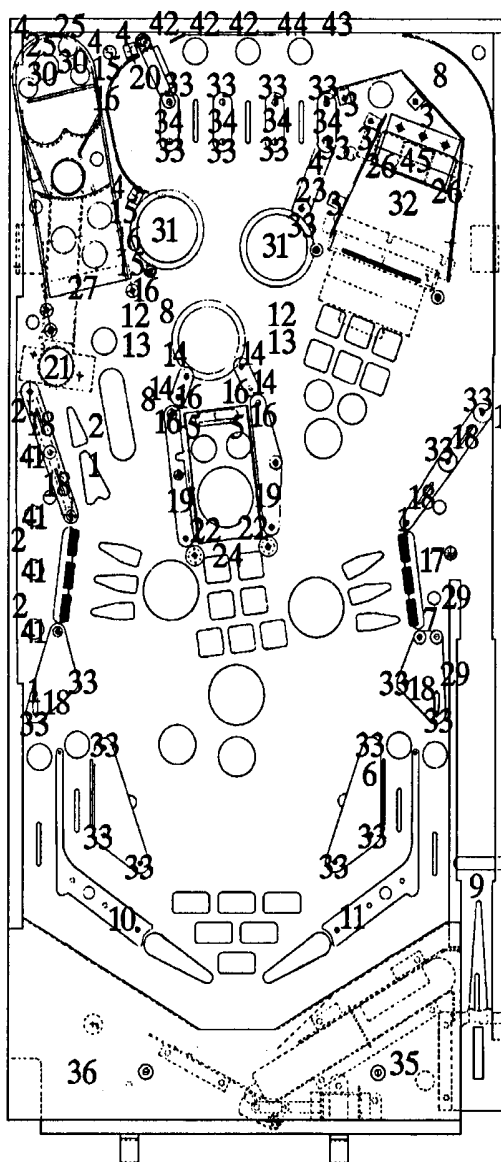
† When ordering PC Boards with ROMs  
please specify game name

## RUBBER PARTS ILLUSTRATION

| Item | Description            | Part #      |
|------|------------------------|-------------|
| A.   | Rubber Post -Long(8)   | 545-5260-00 |
| B.   | Flipper (2)            | 545-5277-00 |
| C.   | $\frac{3}{16}$ " (2)   | 545-5025-01 |
| D.   | $\frac{5}{16}$ " (8)   | 545-5025-02 |
| E.   | 1 $\frac{1}{2}$ " (3)  | 545-5025-07 |
| F.   | 2 $\frac{1}{2}$ " (2)  | 545-5025-09 |
| G.   | 2 $\frac{3}{4}$ " (2)  | 545-5025-20 |
| H.   | Shooter Tip            | 545-5027-00 |
| I.   | Rubber Post -Short (2) | 545-5151-00 |



# Playfield Parts



## No. Description

## Part Number

|                            |                |
|----------------------------|----------------|
| 1. #6X1/2 Hex Typ.         | 234-5001-02    |
| 2. Plastic Spacer (1)      | 254-5000-02    |
| 3. Plastic Spacer (1)      | 254-5000-06    |
| 4. Plastic Spacer (1)      | 254-5000-07    |
| 5. 1/2 Hex Spacer          | 254-5008-03    |
| 6. 1 3/4 Plastic Spacer    | 254-5008-10    |
| 7. Retaining Ring          | 270-5002-00    |
| 8. Wire Gate and Switch    | 500-5314-00-11 |
| 9. Batmobile               | 500-5328-00-11 |
| 10. Lower Left Return      | 517-0111-07-11 |
| 11. Lower Right Return     | 517-0111-08-11 |
| 12. Bumper Post Mach       | 530-5007-00    |
| 13. Post Wood Screw        | 530-5010-01    |
| 14. Mach Post              | 530-5012-02    |
| 15. Metal Standoff         | 530-5035-01    |
| 16. Mach Post Screw        | 530-5012-02    |
| 17. Diverter Shaft         | 530-5173-07    |
| 18. Wire Form 1"           | 535-5300-08    |
| 19. Wire Form              | 535-5300-12    |
| 20. Rebound Hinge          | 535-5372-00    |
| 21. Ball Deflector         | 535-5380-01    |
| 22. Ramp Side Plate        | 535-5442-00    |
| 23. Wire Form              | 535-5603-00    |
| 24. Ramp Plate             | 535-5884-00    |
| 25. Joker Ramp Brkt.       | 535-5890-00    |
| 26. Museum Brkt.           | 535-5894-01    |
| 27. Joker Ramp Plate       | 535-6052-00    |
| 28. Ball Diverter          | 535-6116-00    |
| *29. Light Cover Red       | 545-5014-02    |
| *30. Light Cover Green     | 545-5014-04    |
| 31. Bumper Cap             | 545-5225-03    |
| 32. Flugenheim Museum      | 545-5280-00    |
| 33. Small Plastic Post     | 550-5034-03    |
| 34. Light Hood Single      | 550-5035-03    |
| *35. Coinage Card          | 755-5008-02    |
| *36. Instruction Card      | 755-5011-00    |
| 37. Decal Sheet            | 820-5060-XX    |
| *38. Playfield Mylar       | 820-5818-00    |
| *39. Screened Playfield    | 830-5111-00    |
| *40. Screened Plastics     | 830-5415-XX    |
| 41. SB Mini Hat Mars Amber | 550-5032-03    |
| 42. SB Mini Mars Amber     | 550-5031-03    |
| 43. SB Mini Mars           | 550-5031-07    |
| 44. SB Mini Mars Clear     | 550-5031-01    |
| 45. Scoop                  | 535-6030-00    |

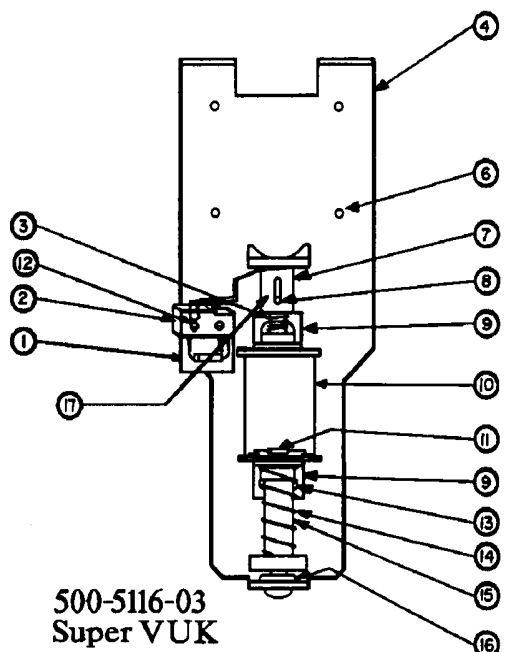
### Note:

See page 25 for switch part numbers

\* Indicates not shown

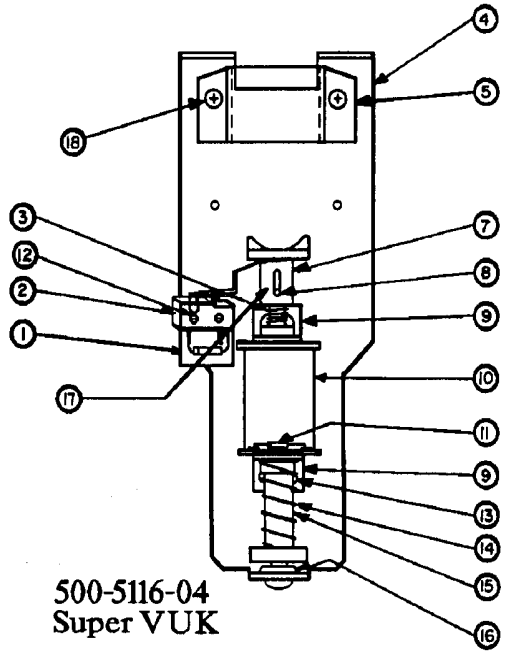


|  | Item | Part # | Description |
|--|------|--------|-------------|
|  |      |        |             |



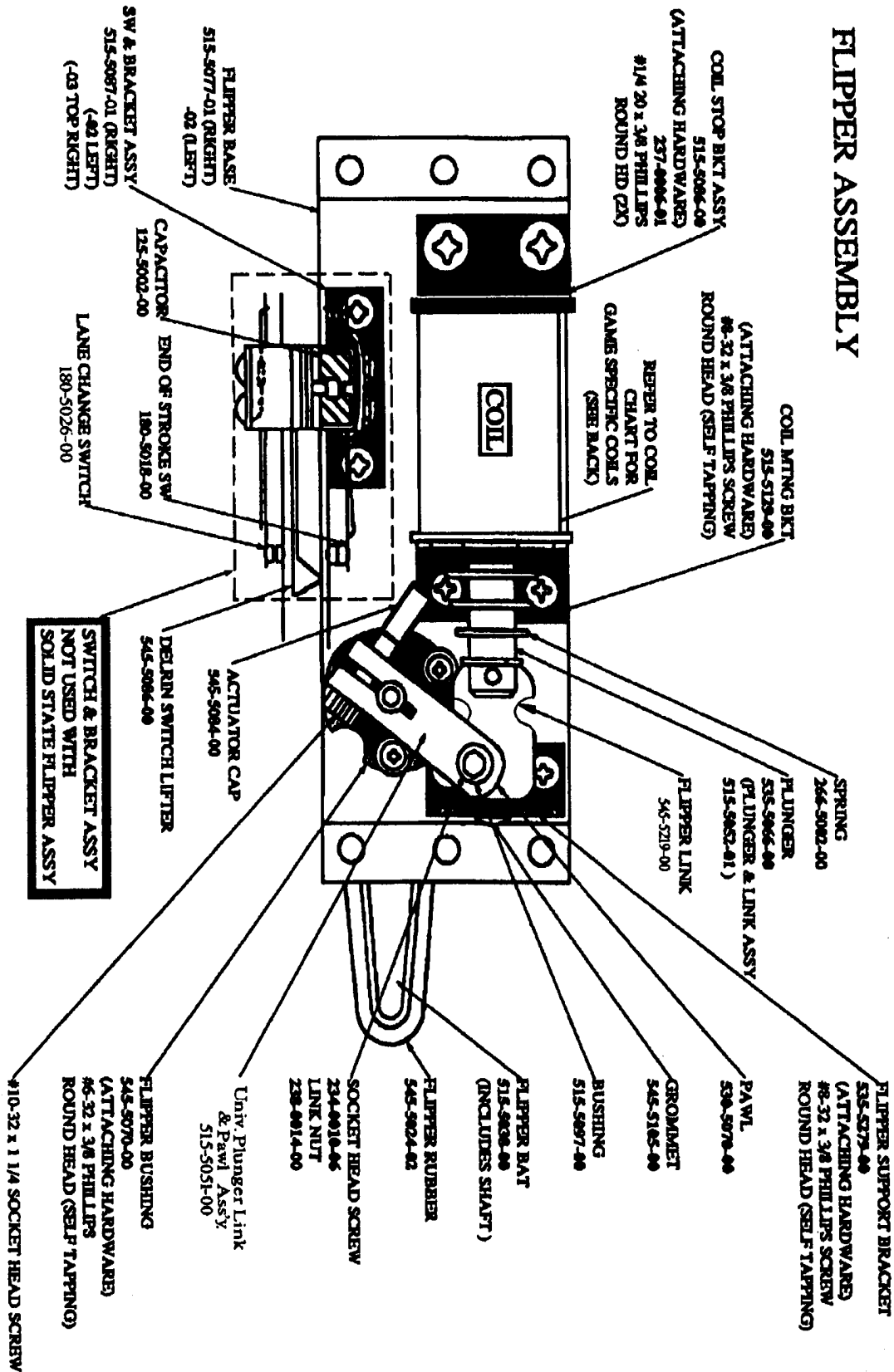
| Item | Part #      | Description                                                     |
|------|-------------|-----------------------------------------------------------------|
| 1    | 545-5193-00 | Sw.Insulator                                                    |
| 2    | 180-5064-00 | Micro Switch                                                    |
| 3    | 266-5025-00 | Cap Spring                                                      |
| 4    | 535-5298-01 | Ball Kickup Mtg. Brkt                                           |
| 5    |             | 6-32 Tap (4)                                                    |
| 6    | 232-5201-00 | #6-32X <sup>3</sup> / <sub>8</sub> SEMS(2)                      |
| 7    | 545-5227-00 | Vert.Kick.Cap                                                   |
| 8    | 535-5111-00 | Pin <sup>3</sup> / <sub>32</sub> x <sup>7</sup> / <sub>16</sub> |
| 9    | 535-5203-01 | Coil Retainer Brkt. (2)                                         |
| 10   | 090-5023-00 | Coil 22-600                                                     |
| 11   | 112-5003-00 | 1N4004 Diode                                                    |
| 12   | 237-5806-00 | 2-56x <sup>1</sup> / <sub>2</sub> Screw(2)                      |
| 13   | 232-5200-00 | #6-32x <sup>1</sup> / <sub>4</sub> Phil.M.S.                    |
| 14   | 266-5009-00 | Spring                                                          |
| 15   | 515-5352-00 | Plunger Assy.                                                   |
| 16   | 280-5003-00 | Bumper                                                          |
| 17   | 270-5010-00 | Compression Ring(3)                                             |

|  | Item | Part # | Description |
|--|------|--------|-------------|
|  |      |        |             |



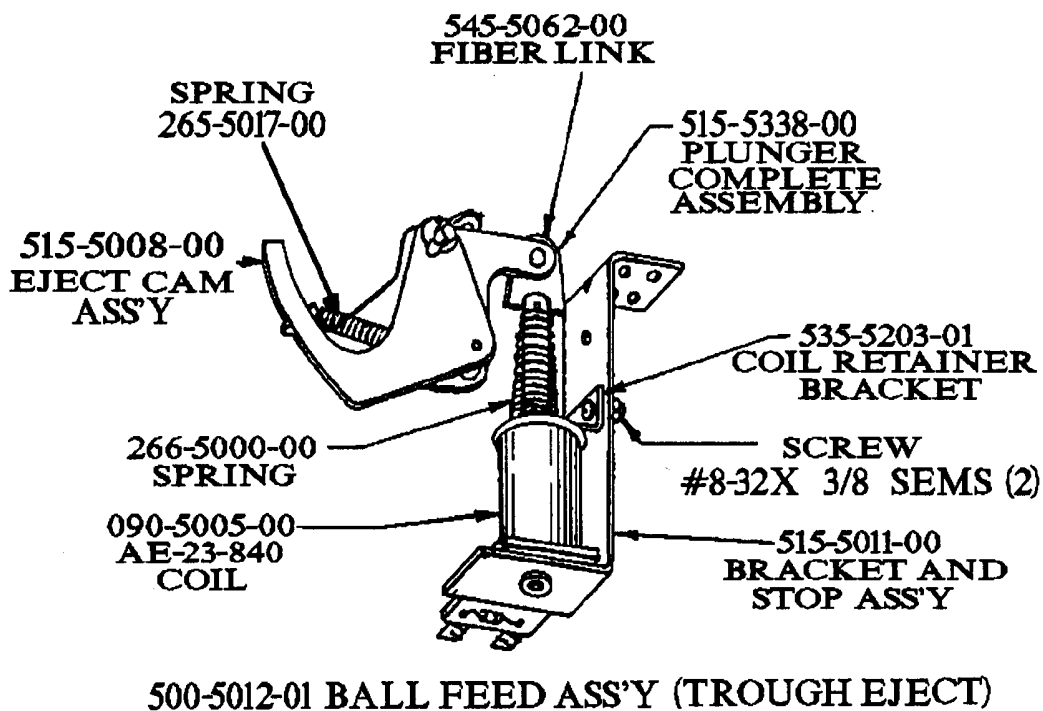
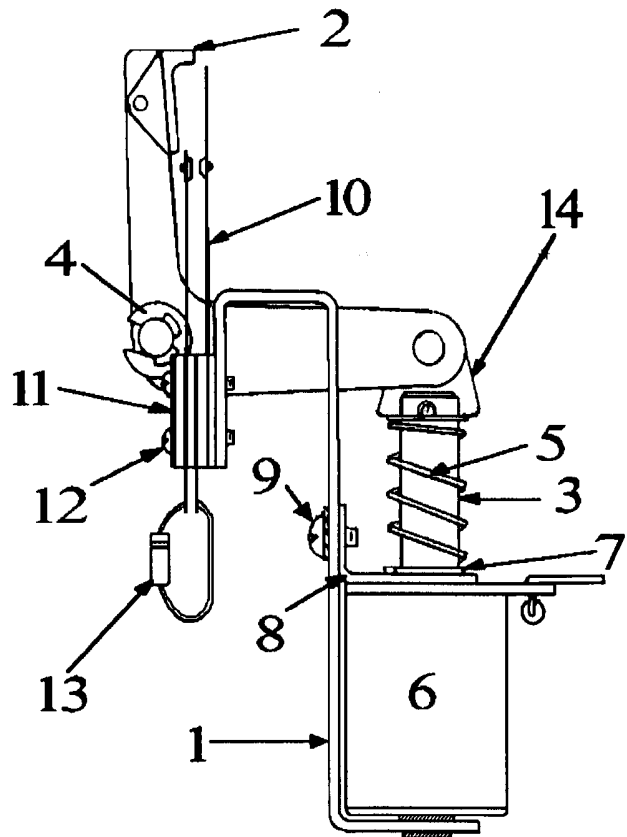
| Item | Part #      | Description                                                     |
|------|-------------|-----------------------------------------------------------------|
| 1    | 545-5193-00 | Sw.Insulator                                                    |
| 2    | 180-5064-00 | Micro Switch                                                    |
| 3    | 266-5025-00 | Cap Spring                                                      |
| 4    | 535-5298-00 | Ball Kickup Mtg. Brkt                                           |
| 5    | 535-6047-00 | Ball Guide Brkt                                                 |
| 6    | 232-5201-00 | #6-32X <sup>3</sup> / <sub>8</sub> SEMS(2)                      |
| 7    | 545-5227-00 | Vert.Kick.Cap                                                   |
| 8    | 535-5111-00 | Pin <sup>3</sup> / <sub>32</sub> x <sup>7</sup> / <sub>16</sub> |
| 9    | 535-5203-01 | Coil Retainer Brkt. (2)                                         |
| 10   | 090-5001-00 | Coil 23-800                                                     |
| 11   | 112-5003-00 | 1N4004 Diode                                                    |
| 12   | 237-5806-00 | 2-56x <sup>1</sup> / <sub>2</sub> Screw(2)                      |
| 13   | 232-5200-00 | #6-32x <sup>1</sup> / <sub>4</sub> Phil.M.S.                    |
| 14   | 266-5009-00 | Spring                                                          |
| 15   | 515-5352-00 | Plunger Assy.                                                   |
| 16   | 280-5003-00 | Bumper                                                          |
| 17   | 270-5010-00 | Compression Ring(3)                                             |
| 18   | 232-5200-00 | #6-32 X <sup>1</sup> / <sub>4</sub> SEMS                        |

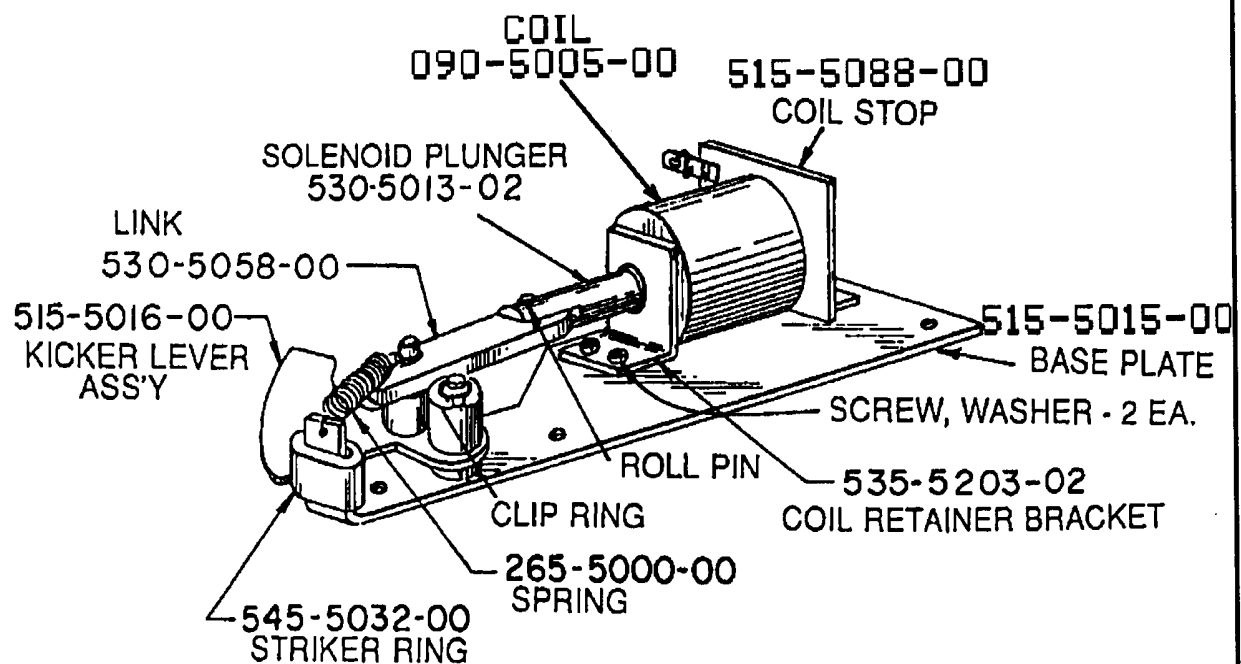
# FLIPPER ASSEMBLY



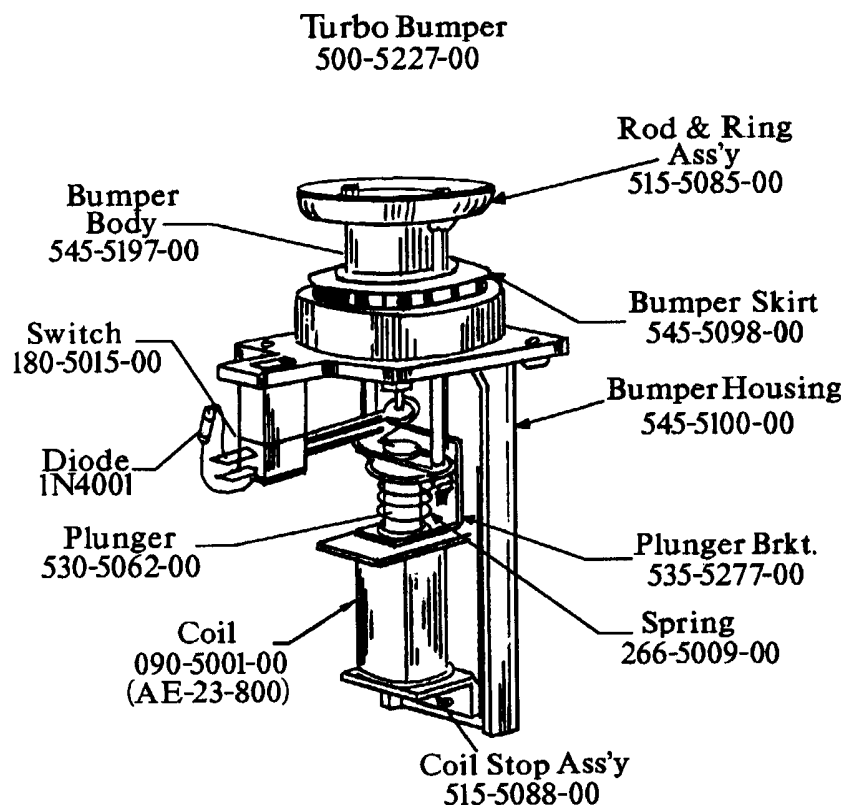
## Slingshot Assembly 500-5226-00

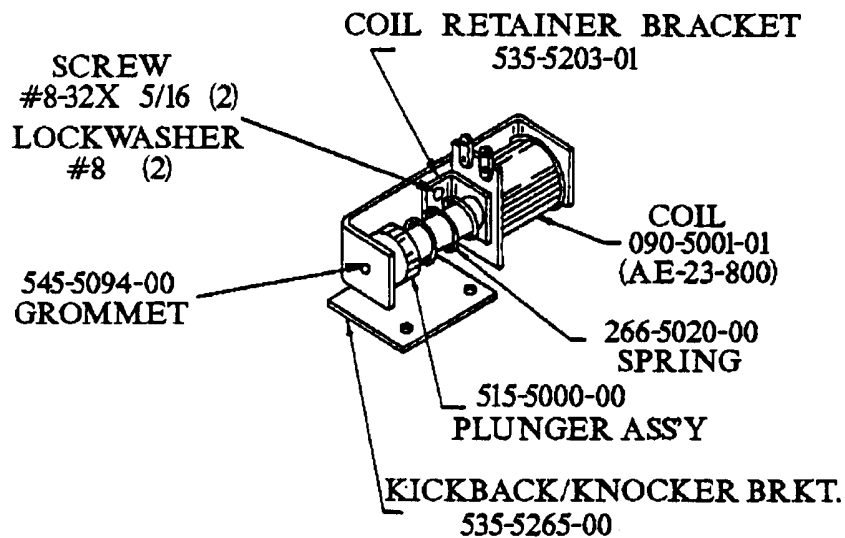
| Item | Description            | Part No.    |
|------|------------------------|-------------|
| 1    | Slingshot Bracket      | 515-5339-00 |
| 2    | S.S. Arm & Tip Assy.   | 515-5340-00 |
| 3    | Plunger & Link Assy.   | 515-5338-00 |
| 4    | 1/4 Retaining Ring (2) | 270-5002-00 |
| 5    | Spring                 | 266-5020-00 |
| 6    | 23-800 Coil            | 090-5001-02 |
| 7    | Coil Sleeve            | 260-0004-00 |
| 8    | Coil Retainer          | 535-5203-01 |
| 9    | #8-32 X 1/4" Screw (2) | 232-5300-00 |
| 10   | Slingshot Switch (2)   | 180-5054-00 |
| 11   | Tension Plate (2)      | 535-5846-00 |
| 12   | #4-40 X 1/2" Screw (4) | 237-5837-00 |
| 13   | Diode 1N4004 (2)       | 112-5004-00 |
| 14   | Link, Plunger          | 545-5062-00 |



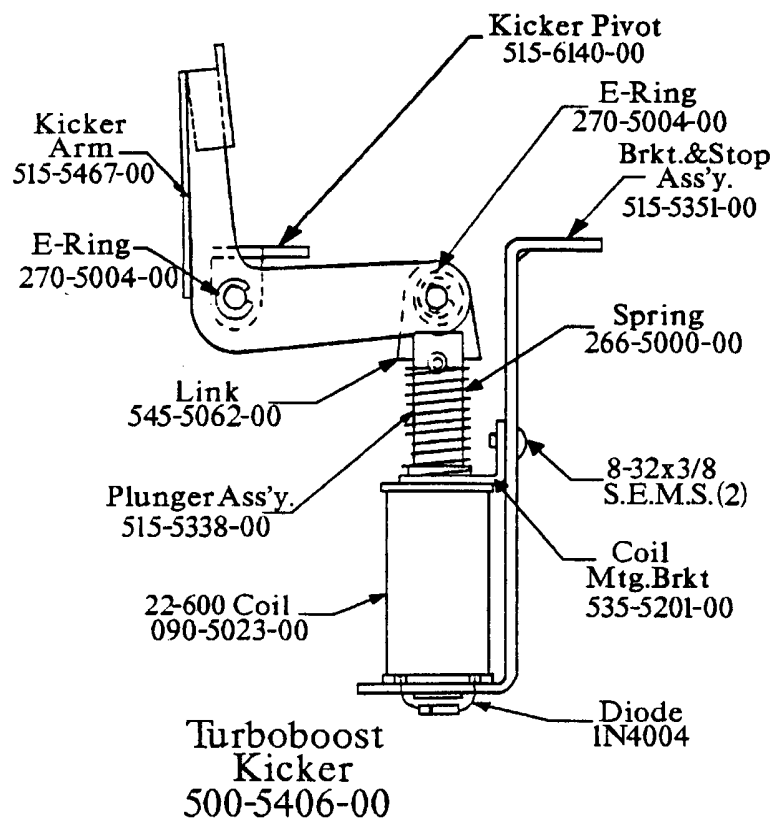


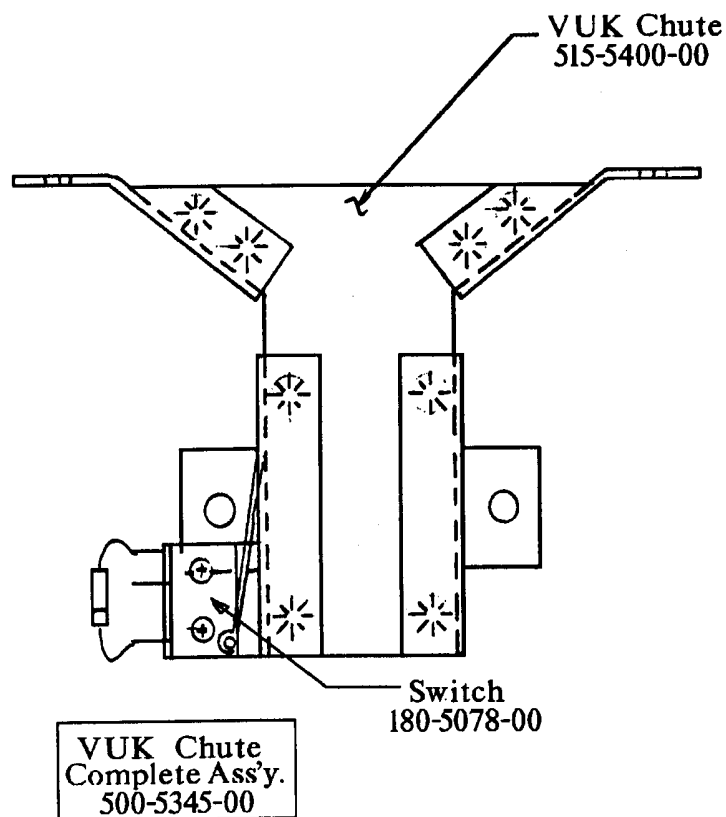
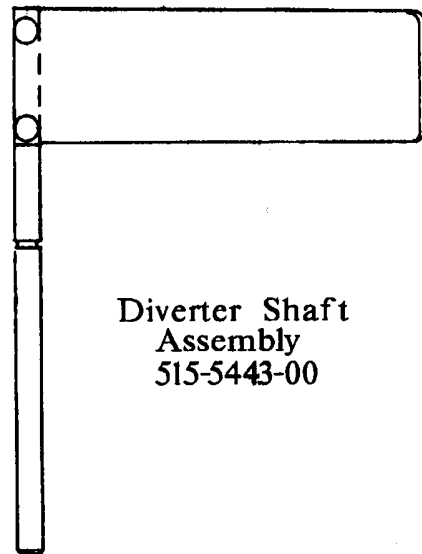
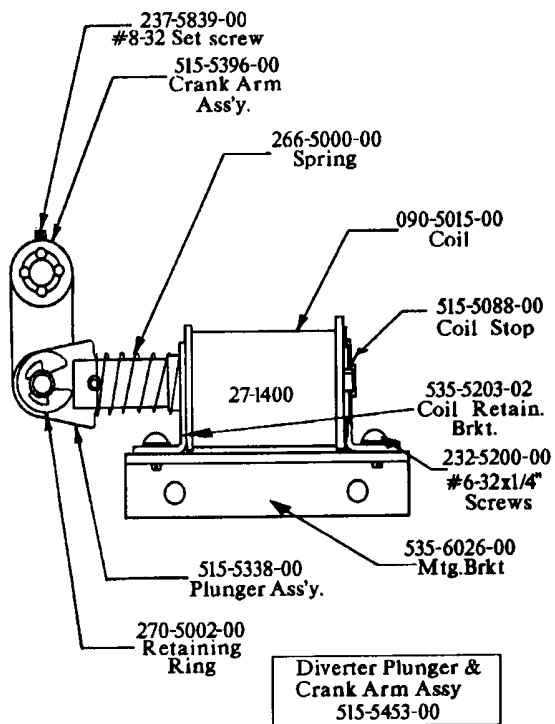
### 500-5082-00 OUTHOLE BALL RETURN ASSY

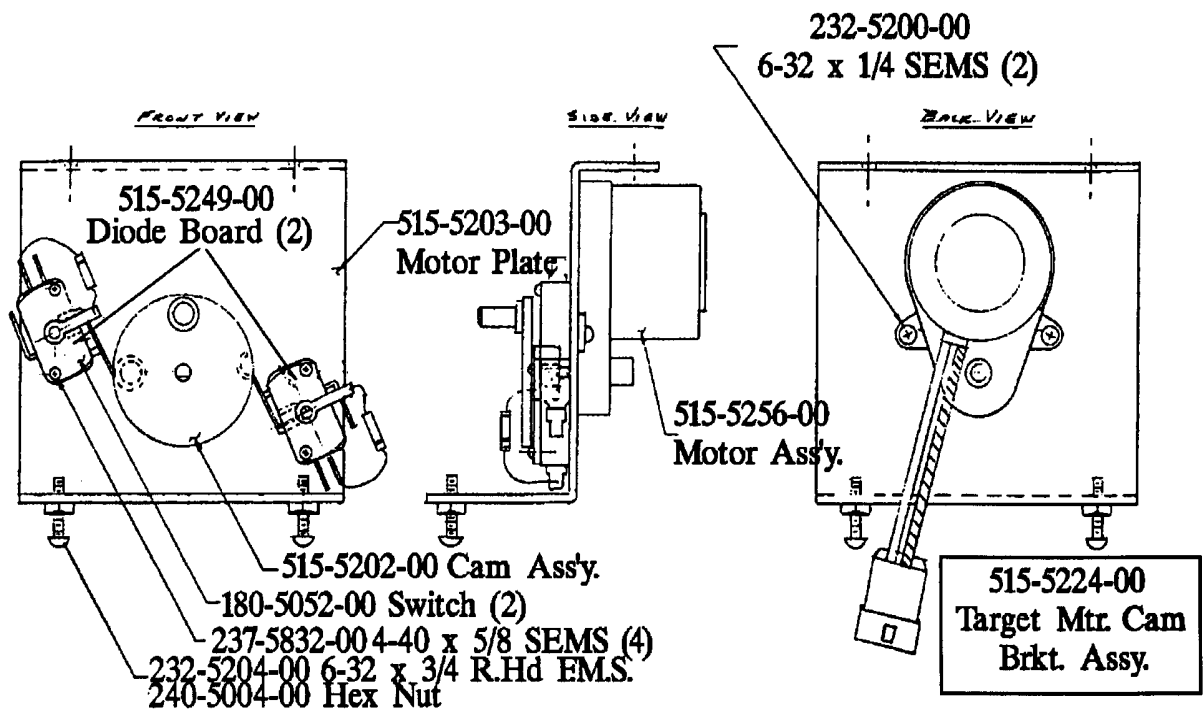
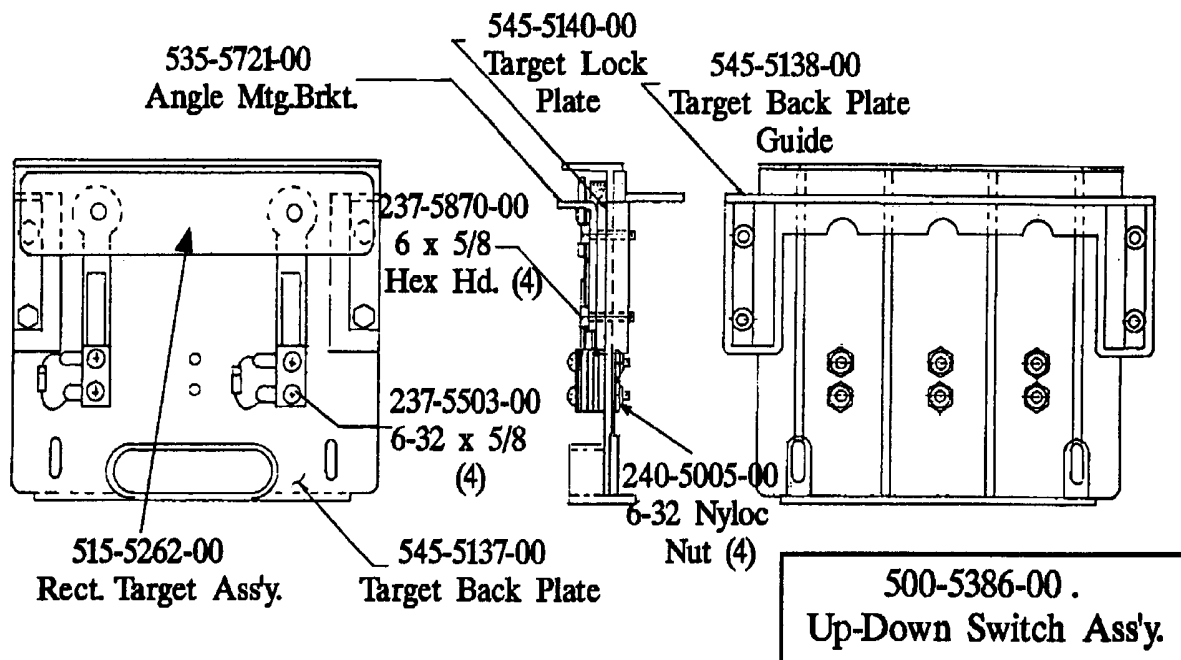


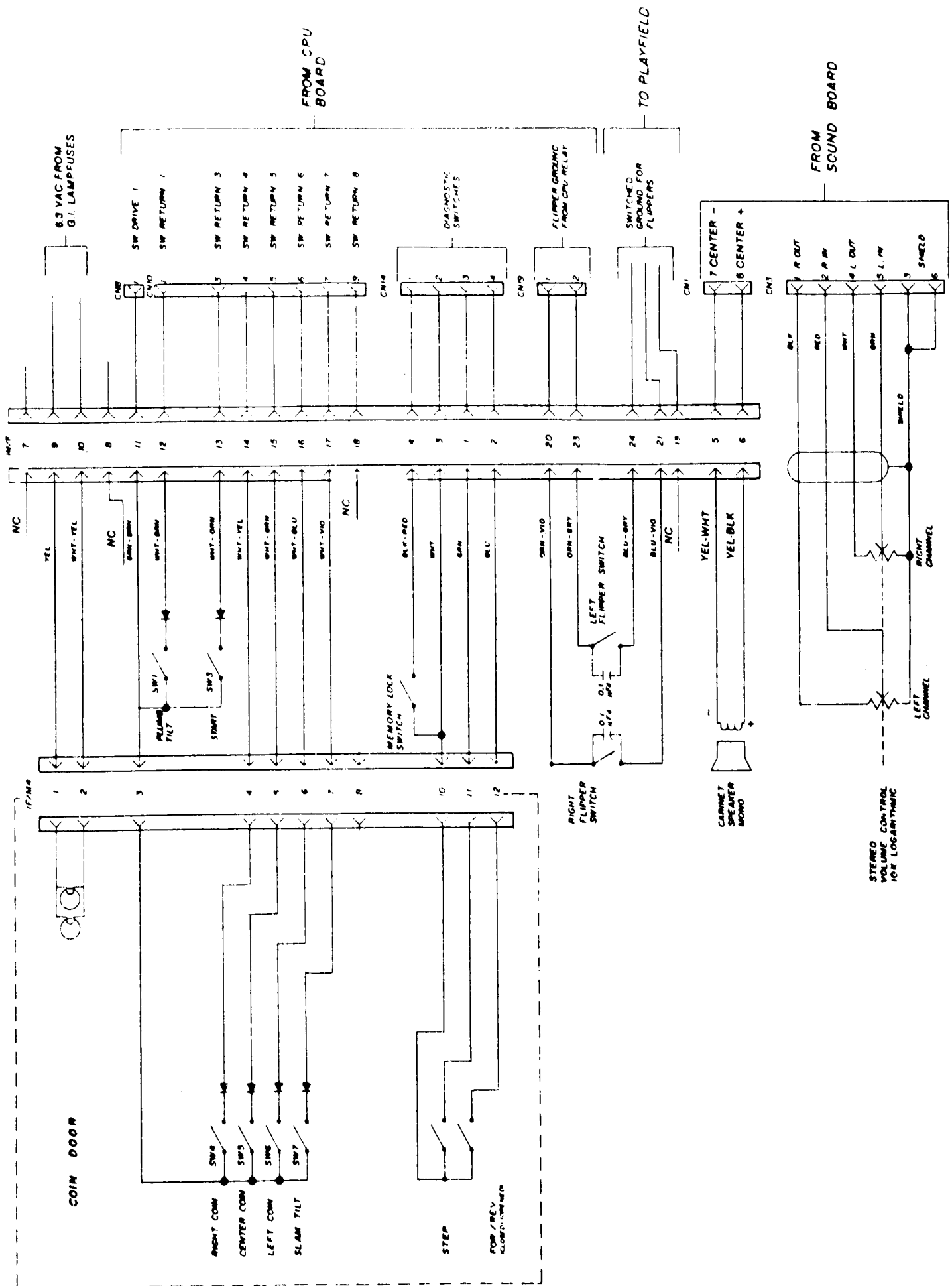


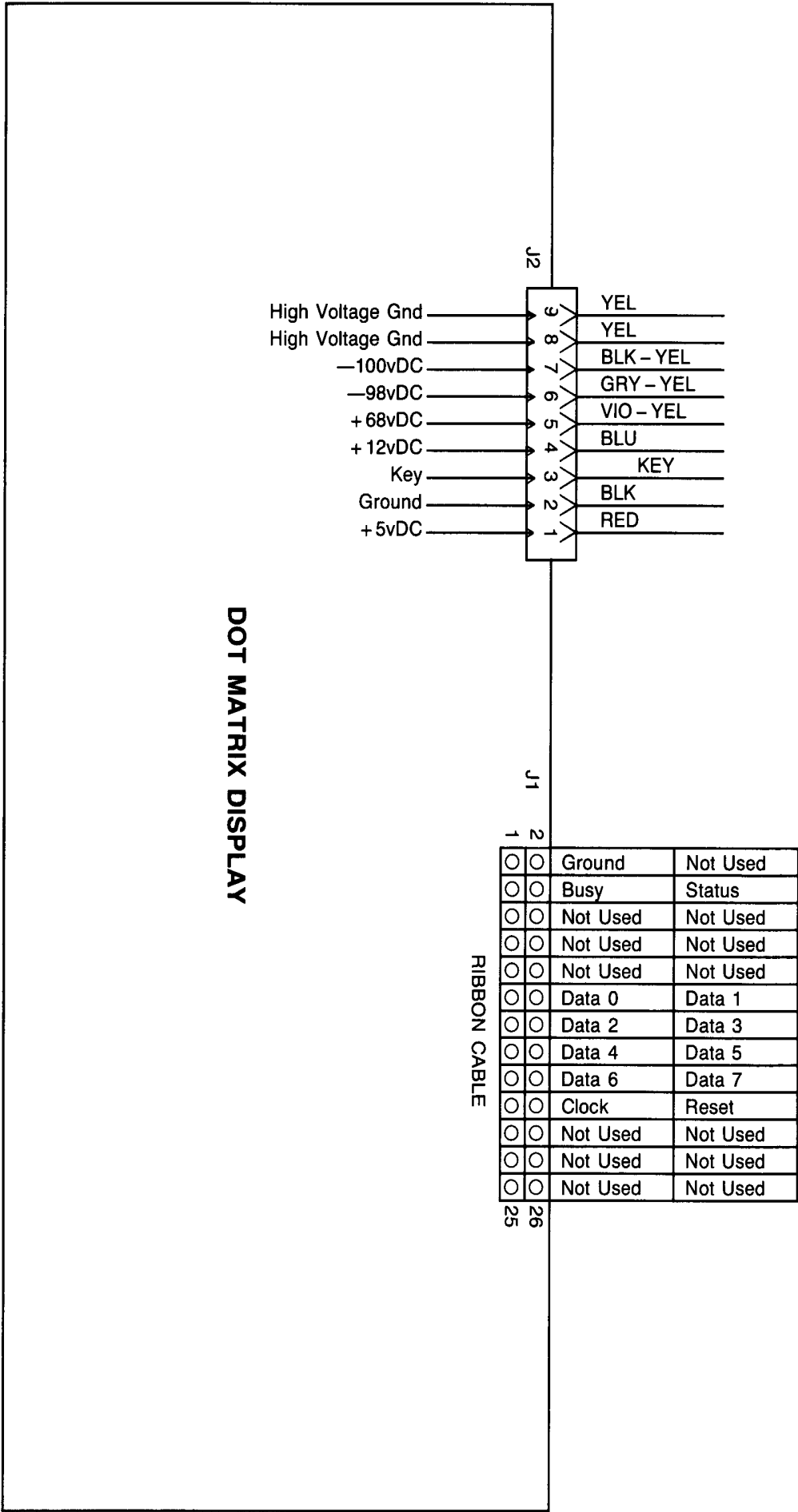
KICKBACK ASSEMBLY 500-5080-00 (COIL LUGS ON THE SIDE )  
 KNOCKER ASSEMBLY 500-5081-00 (PICTURED)





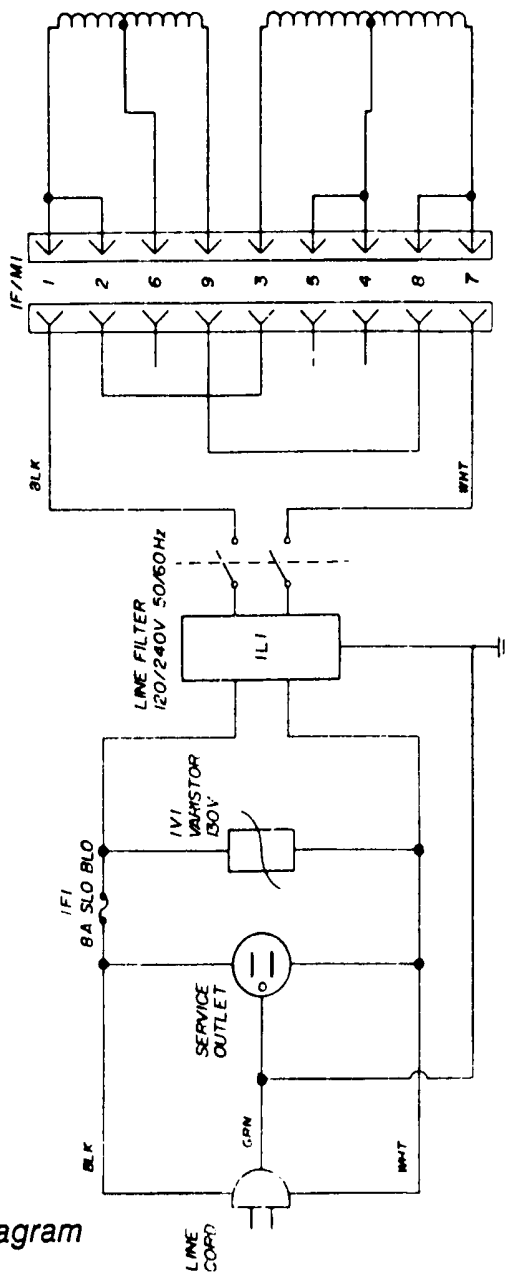






**THIS CONFIGURATION FOR 115V**

FOR LOWER LINE VOLTAGES  
OR 230 VOLT OPERATION  
SEE SAMPLES BELOW

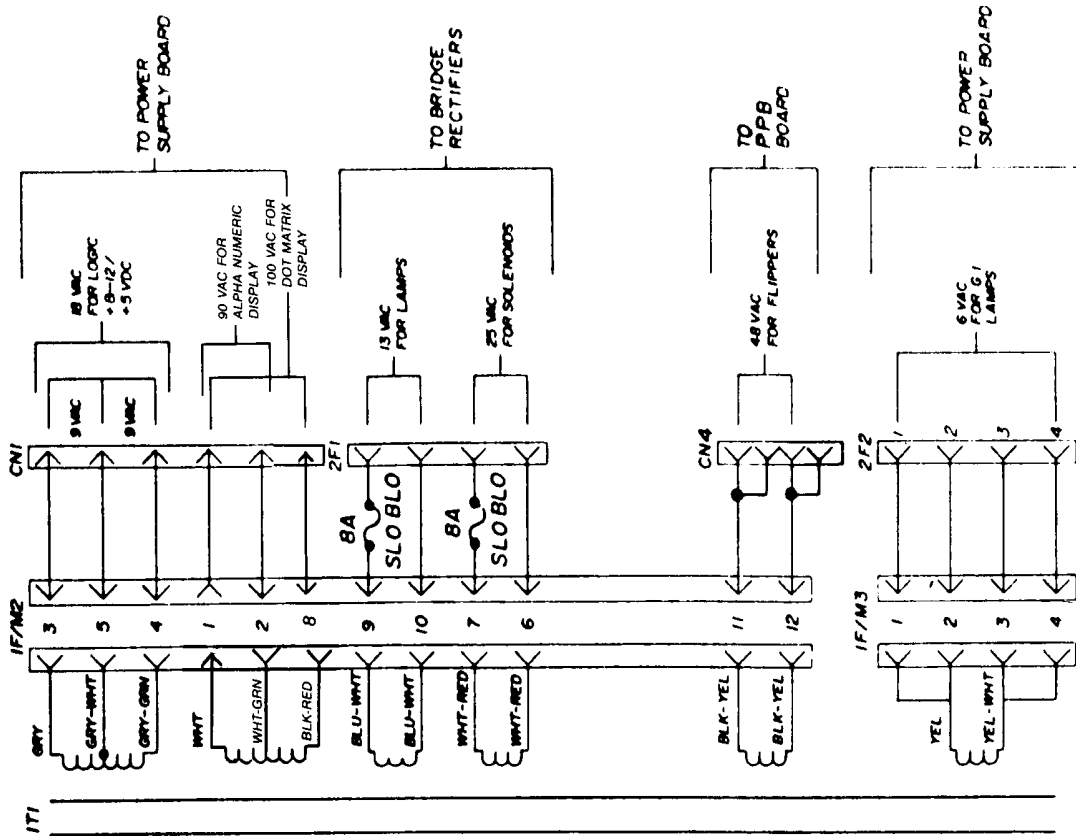
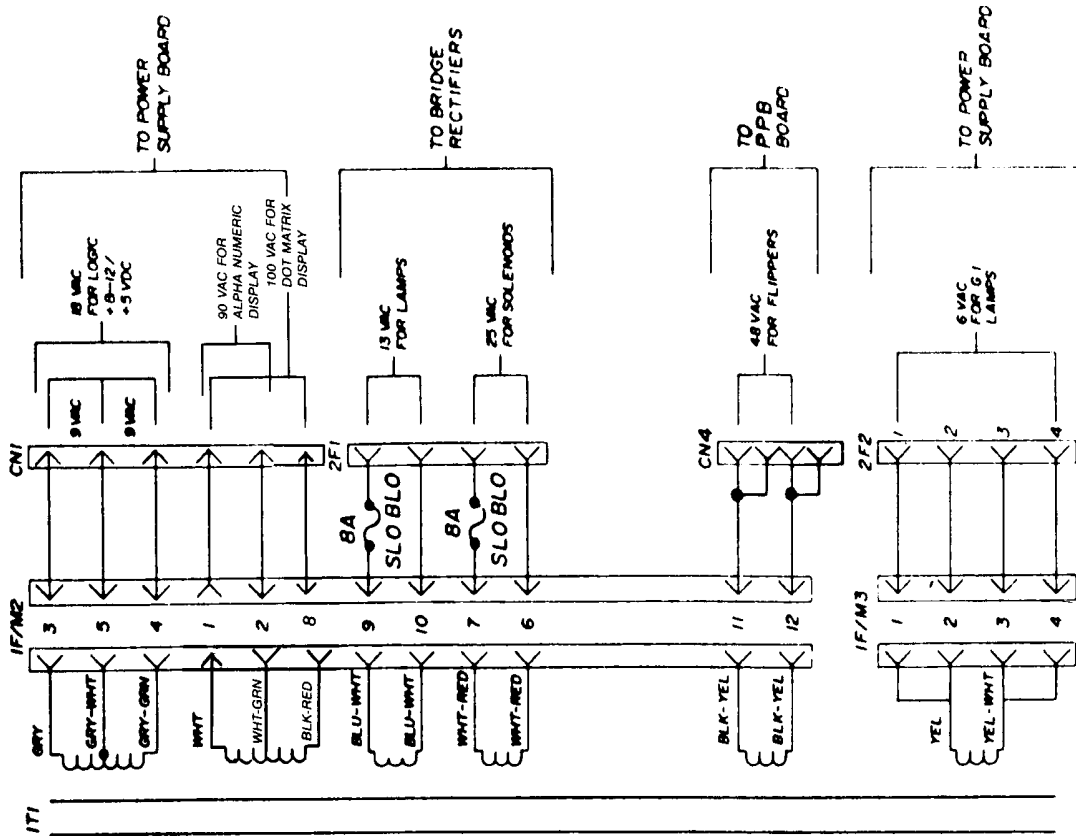
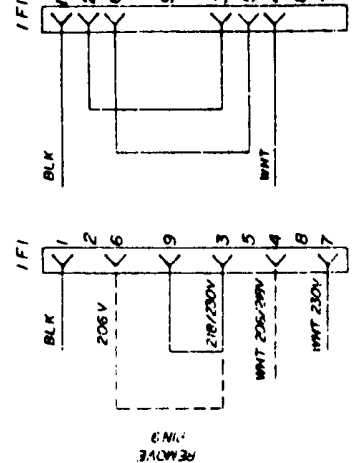


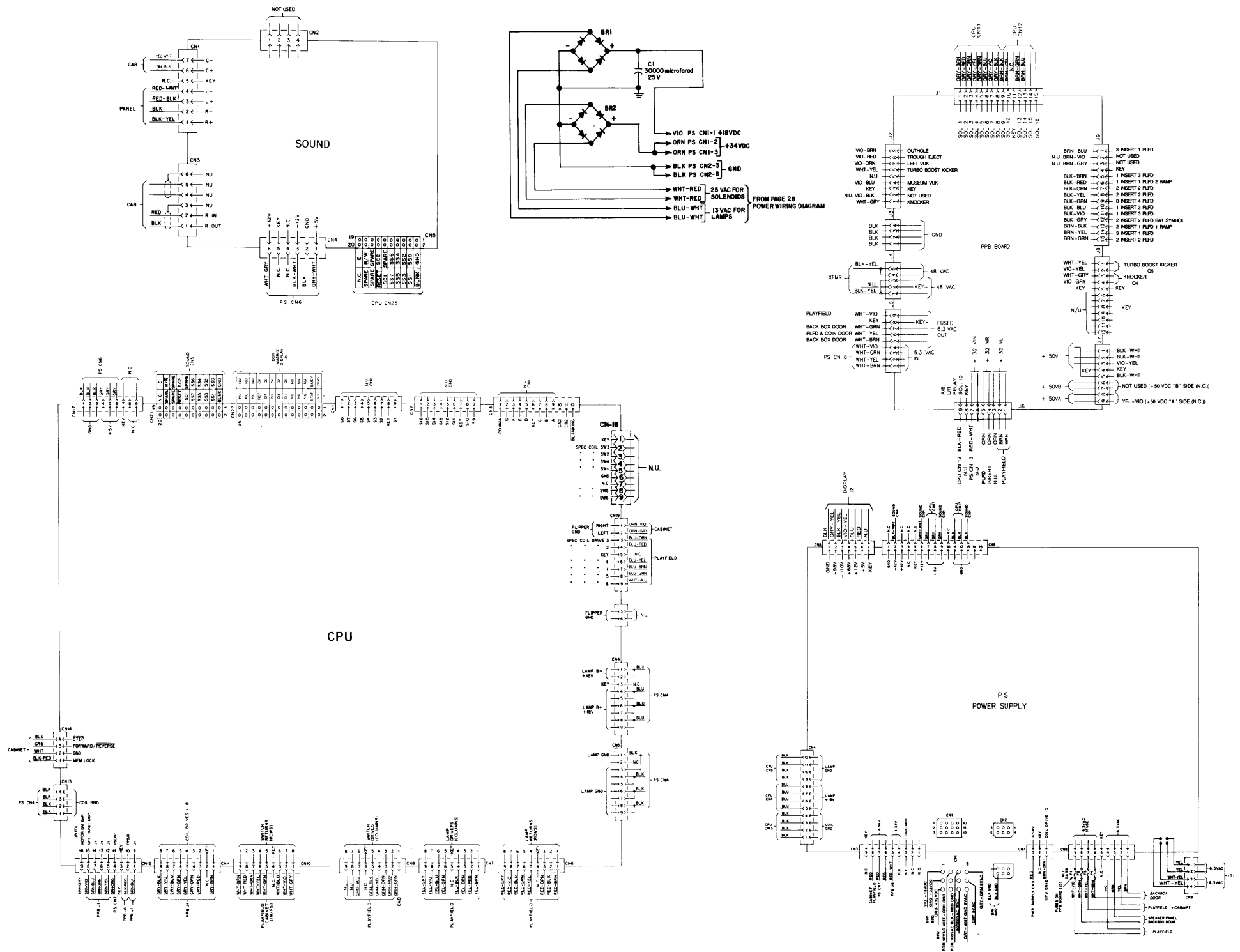
**JUMPERS FOR VOLTAGE VARIATION**

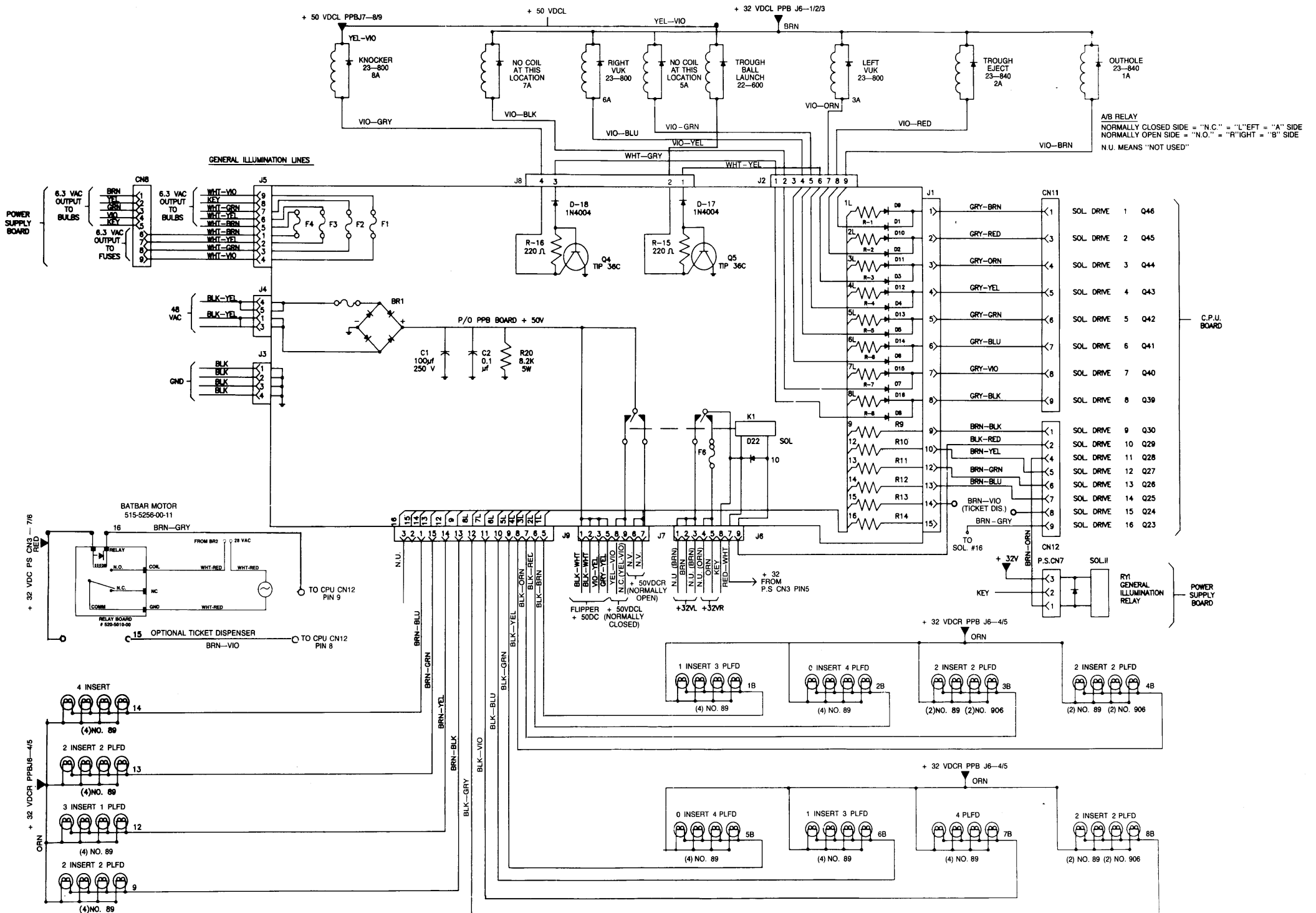
230/218/206 VOLTS 100/105 VOLTS

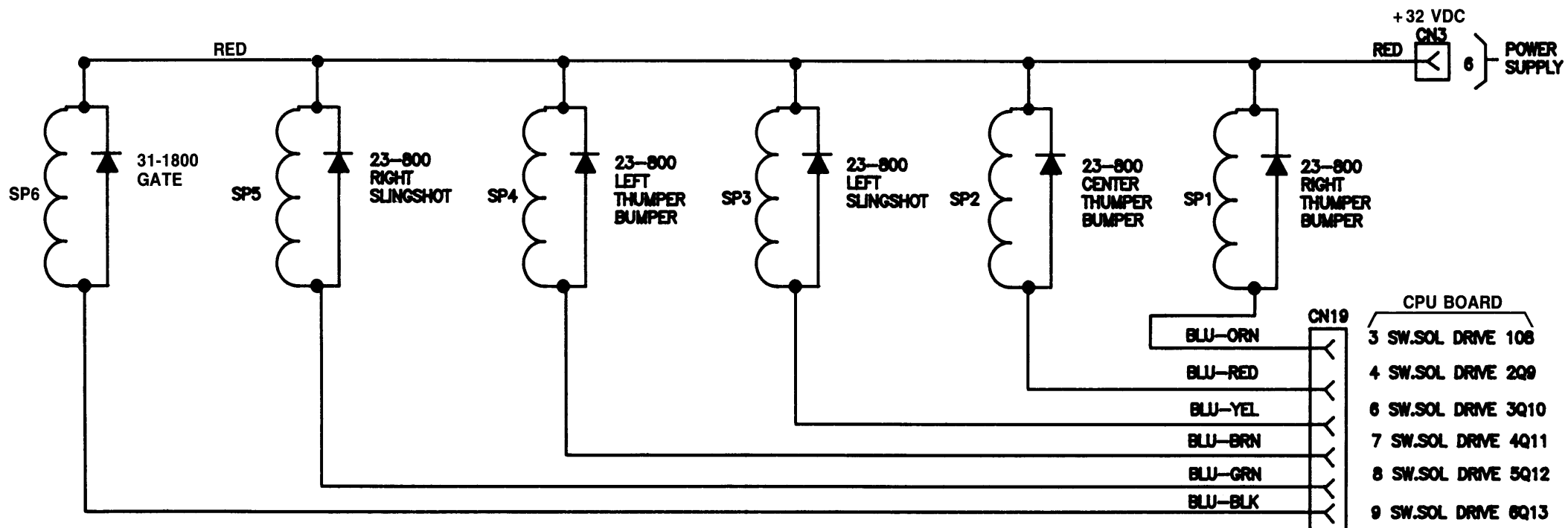
I/F1 - 4A SLO BLO I/F1 - 8A SLO BLO

I/V1 - 275V VARIATOR I/V1 - 130V VARIATOR





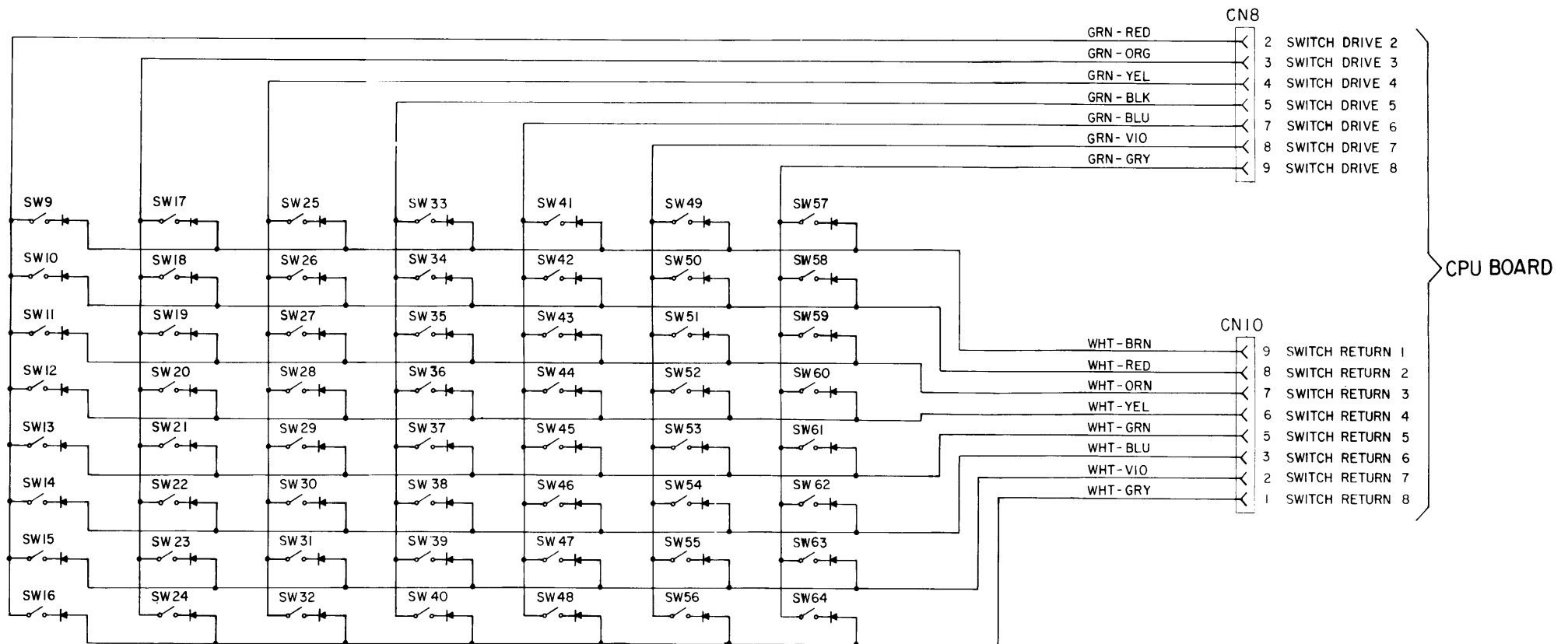




**Switch  
Number Description**

|     |                        |    |                         |    |                     |    |                         |
|-----|------------------------|----|-------------------------|----|---------------------|----|-------------------------|
| 01* | Plumb Tilt             | 16 | Right Flip. Cab. Switch | 31 | Not Used            | 46 | Not Used                |
| 02  | Not Used               | 17 | Left Top Lane           | 32 | Not Used            | 47 | Left Slingshot Sw. (2)  |
| 03  | Credit Button          | 18 | Center Top Lane         | 33 | Left Bank Top       | 48 | Right Slingshot Sw. (2) |
| 04* | Right Coin             | 19 | Right Top Lane          | 34 | Left Bank Middle    | 49 | Bat Bar StandupTarget   |
| 05* | Center Coin            | 20 | Not Used                | 35 | Left Bank Bottom    | 50 | Museum Motor Up         |
| 06* | Left Coin              | 21 | Left Return Lane        | 36 | Joker Left Eye      | 51 | Museum Motor Down       |
| 07* | Slam Tilt              | 22 | Right Return Lane       | 37 | Joker Right Eye     | 52 | Right VUK Top           |
| 08  | Not Used               | 23 | Left Outlane            | 38 | Joker Mouth         | 53 | Right VUK Bottom        |
| 09  | Not Used               | 24 | Right Outlane           | 39 | Left VUK            | 54 | Bumper Left             |
| 10  | Out Hole               | 25 | Not Used                | 40 | Not Used            | 55 | Bumper Center           |
| 11  | Trough #1(Left)        | 26 | Not Used                | 41 | Right 3 Bank Top    | 56 | Bumper Right            |
| 12  | Trough #2(Center)      | 27 | Not Used                | 42 | Right 3 Bank Middle | 57 | Not Used Through 64     |
| 13  | Trough #3(Right)       | 28 | Ramp Entrance           | 43 | Right 3 Bank Bottom |    |                         |
| 14  | Shooter Lane           | 29 | Ramp Exit               | 44 | Not Used            |    |                         |
| 15  | Left Flip. Cab. Switch | 30 | Not Used                | 45 | Not Used            |    |                         |

\* Indicates cabinet switches.



**Lamp Number Description**

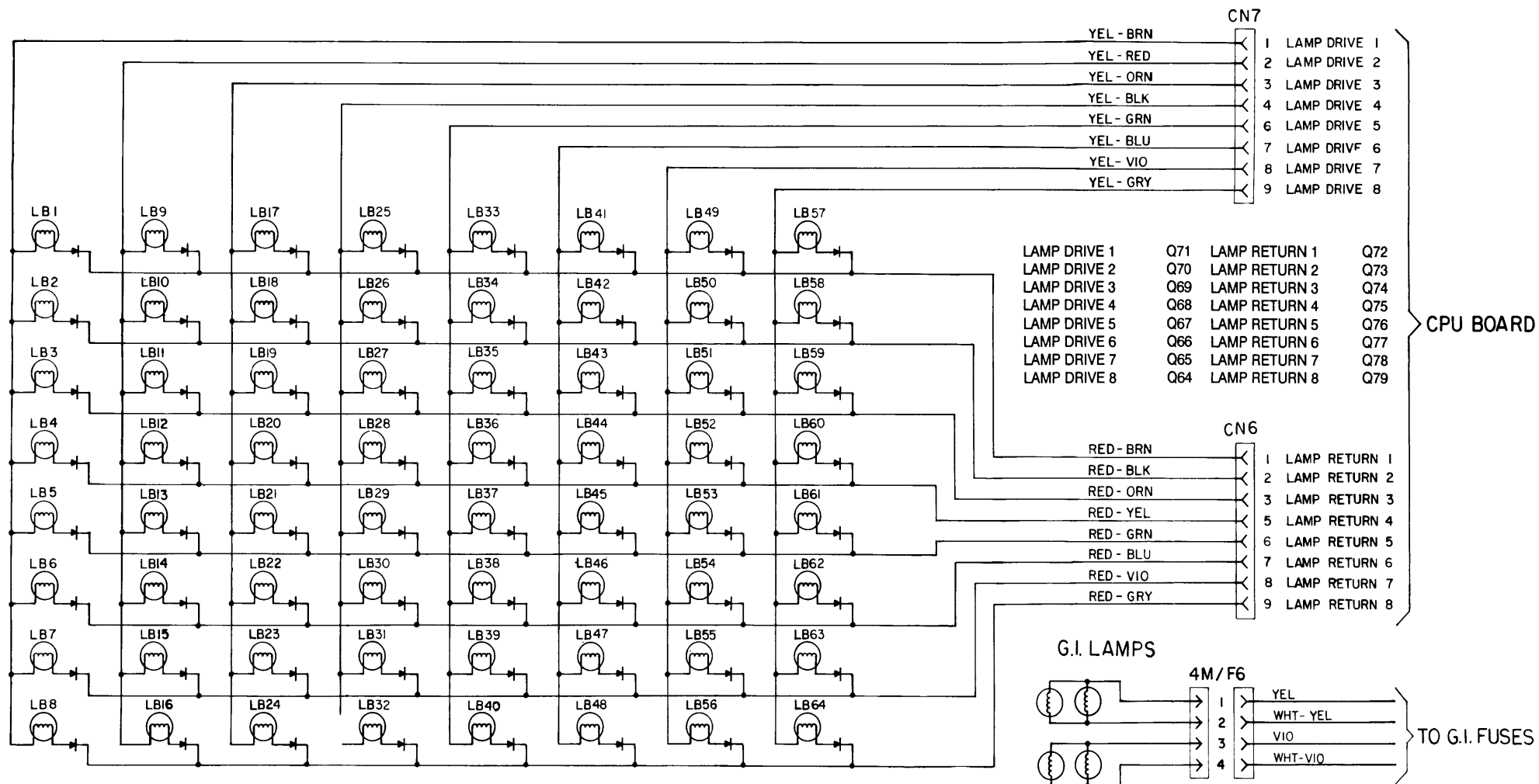
01. 1 Million  
02. Super Bumps  
03. Lite Xball  
04. Fast Money  
05. Instant 2 Ball  
06. Million Plus  
07. Max X Value  
08. Spot Fast Money  
09. Bottom 2X  
10. Bottom 4X  
11. Bottom 6X  
12. Bottom 8X  
13. Bottom 10X  
14. Shoot Again  
15. Batman's Head  
16. Batman's Chest

17. Left Toplane  
18. Center Toplane  
19. Right Toplane  
20. Playfield Moon  
21. Left Return Lane  
22. Right Return Lane  
23. Left Outlane  
24. Right Outlane  
25.\* Backpanel Left  
26.\* Backpanel Center  
27.\* Backpanel Right  
28.\* Backpanel 500K  
29.\* Backpanel XBall  
30. Double Score  
31. Under Ramp XBall  
32. 3 Million

\*Indicates Speaker or Backbox Lamp

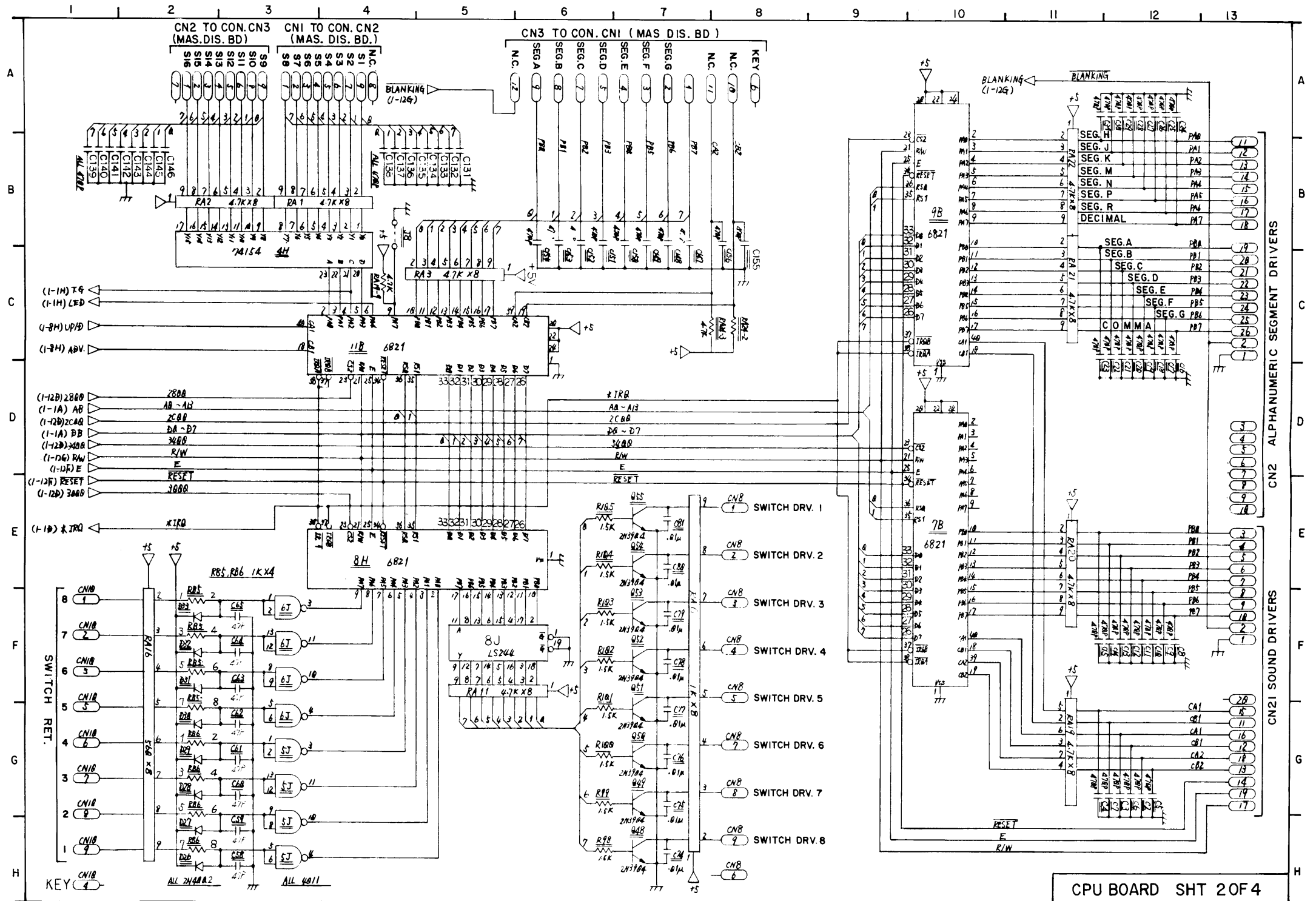
33. Left 3 Bank Top  
34. Left 3 Bank Middle  
35. Left 3 Bank Bottom  
36. Joker Left Eye  
37. Joker Right Eye  
38. Joker 2 Million  
39. Left VUK Extra Ball  
40. Left 3 Bank Done  
41. Right 3 Bank Top  
42. Right 3 Bank Middle  
43. Right 3 Bank Bottom  
44. Left Bumper  
45. Center Bumper  
46. Right Bumper  
47. Spot Bat Monitor  
48. Right 3 Bank Done

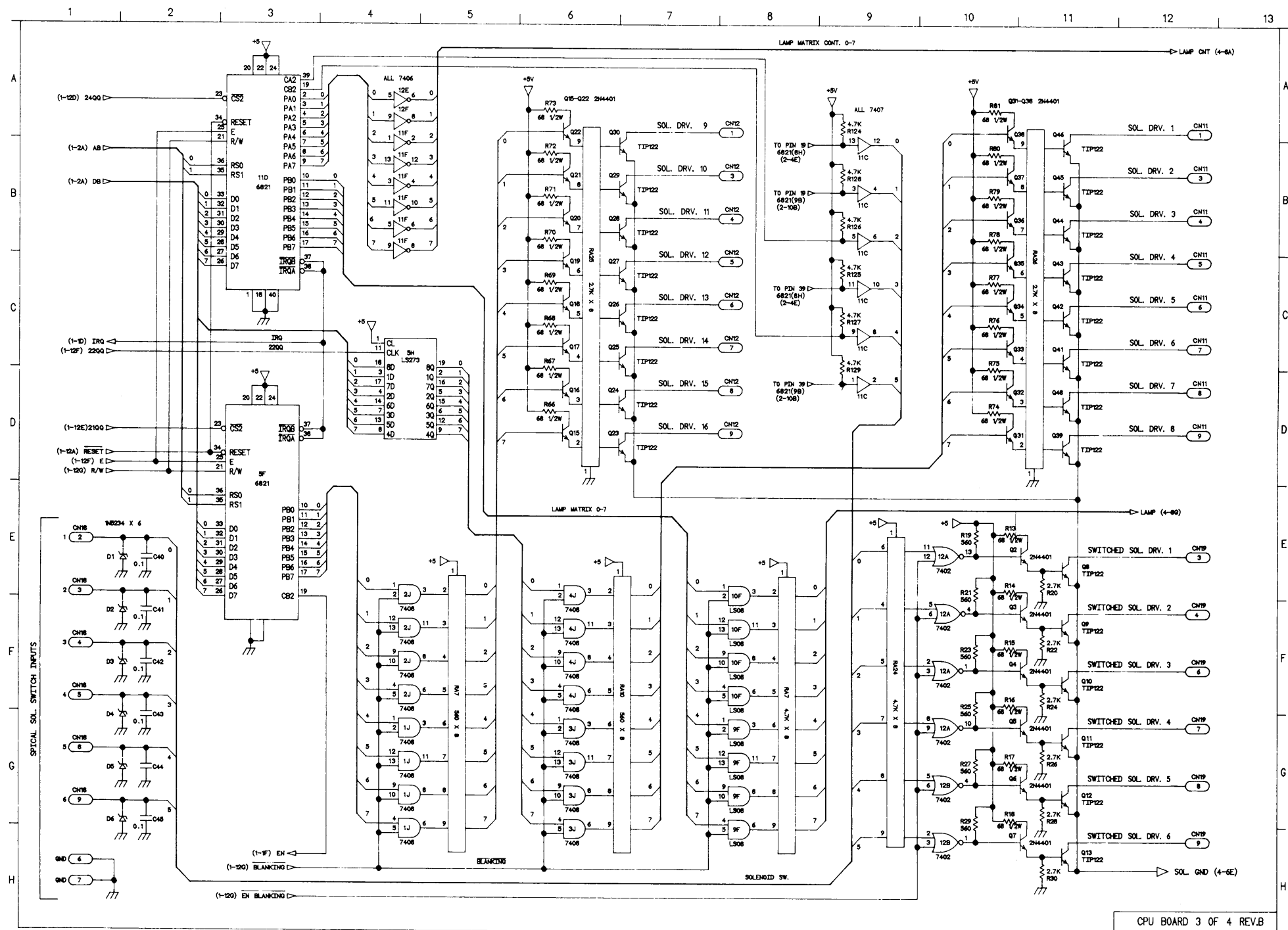
49. Ramp Diverter  
50.\* Insert-Moon (2)  
51.\* Insert-5 Million  
52.\* Insert-15 Million  
53.\* Insert-10 Million  
54. Cab.-Start Button  
55. Museum Bat Symbol  
56. Jackpot Lit  
57. BATMAN  
58. BATMAN  
59. BATMAN  
60. BATMAN  
61. BATMAN  
62. BATMAN  
63. Lock Ball #1  
64. Lock Ball #2

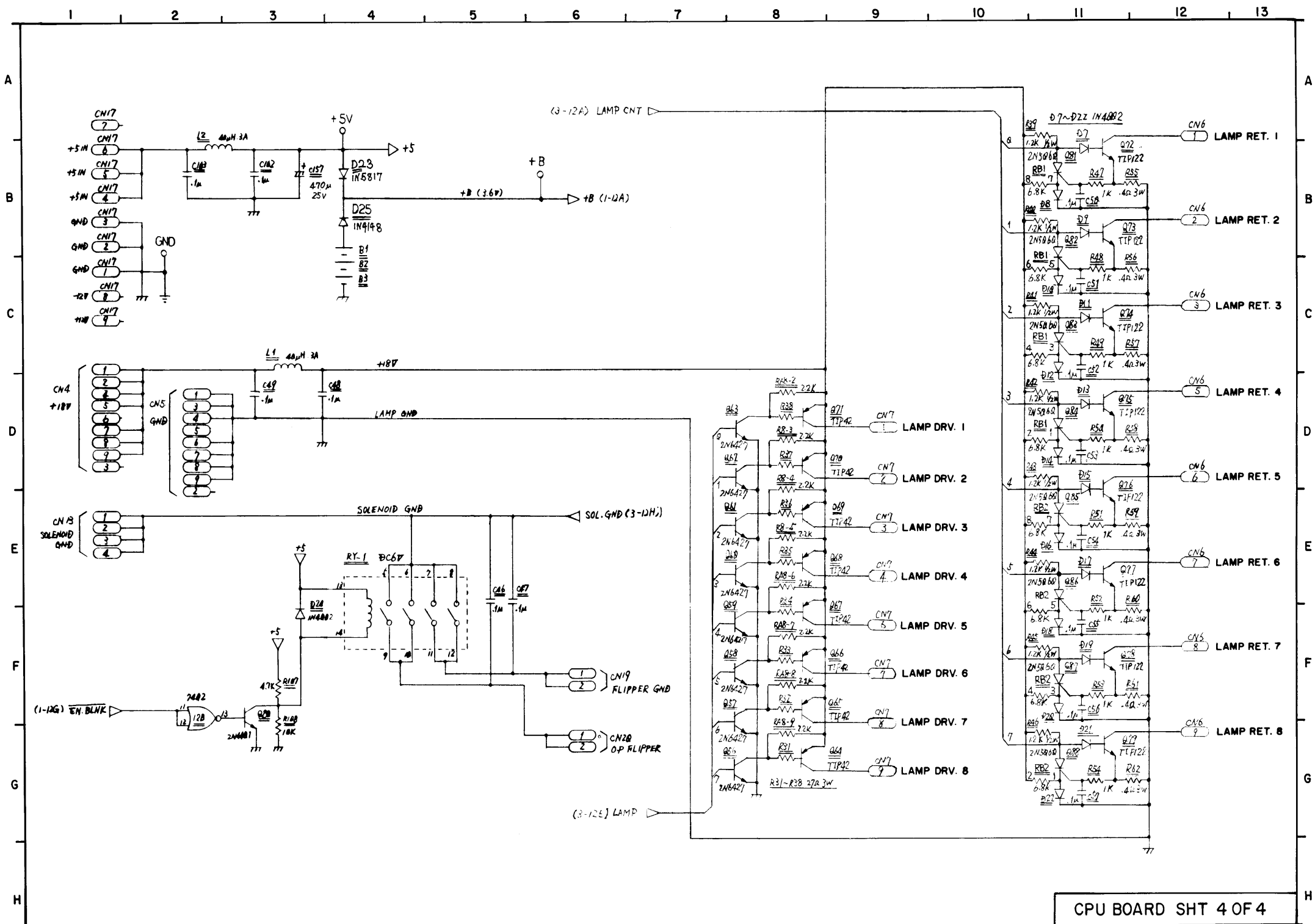


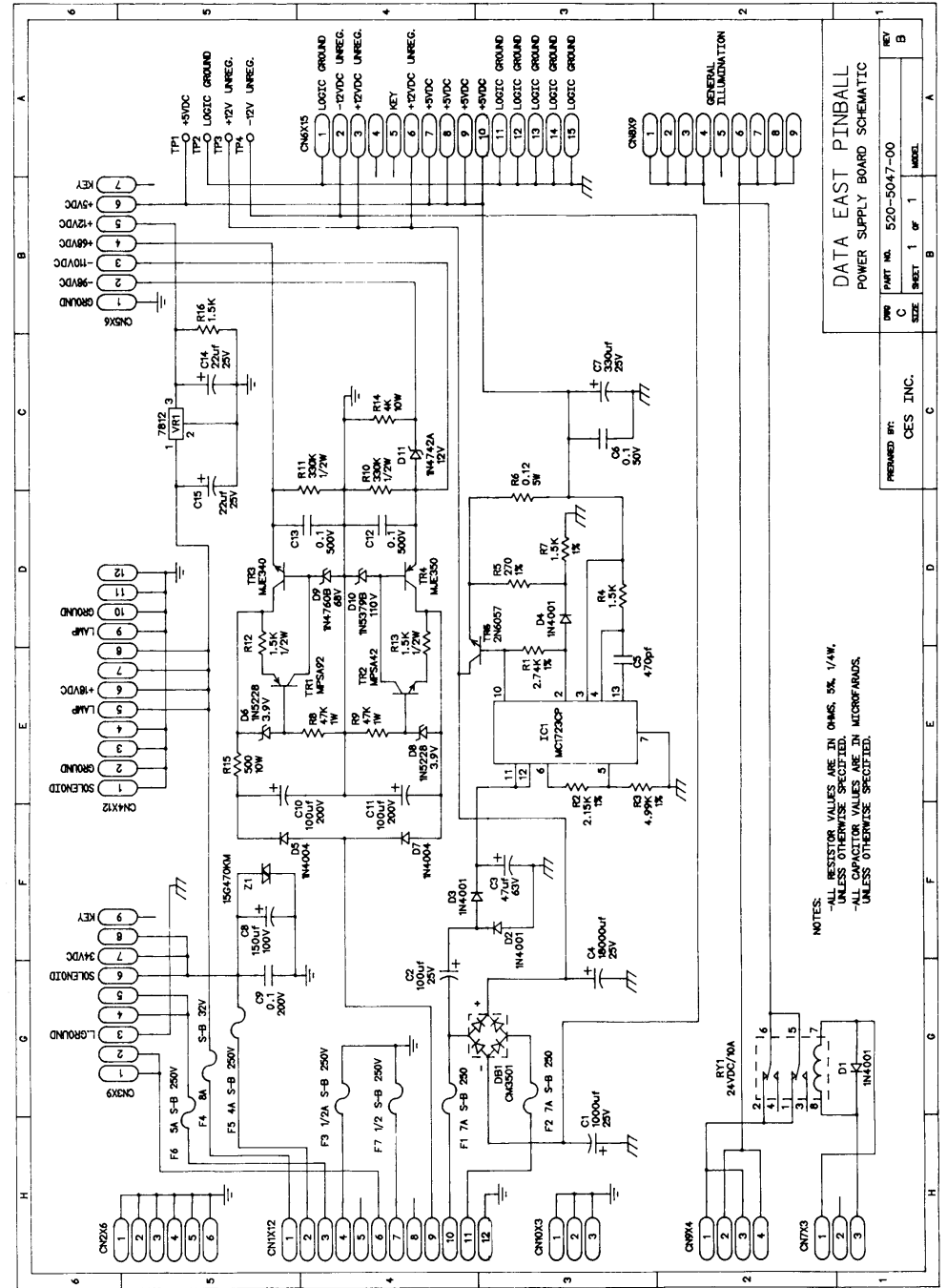
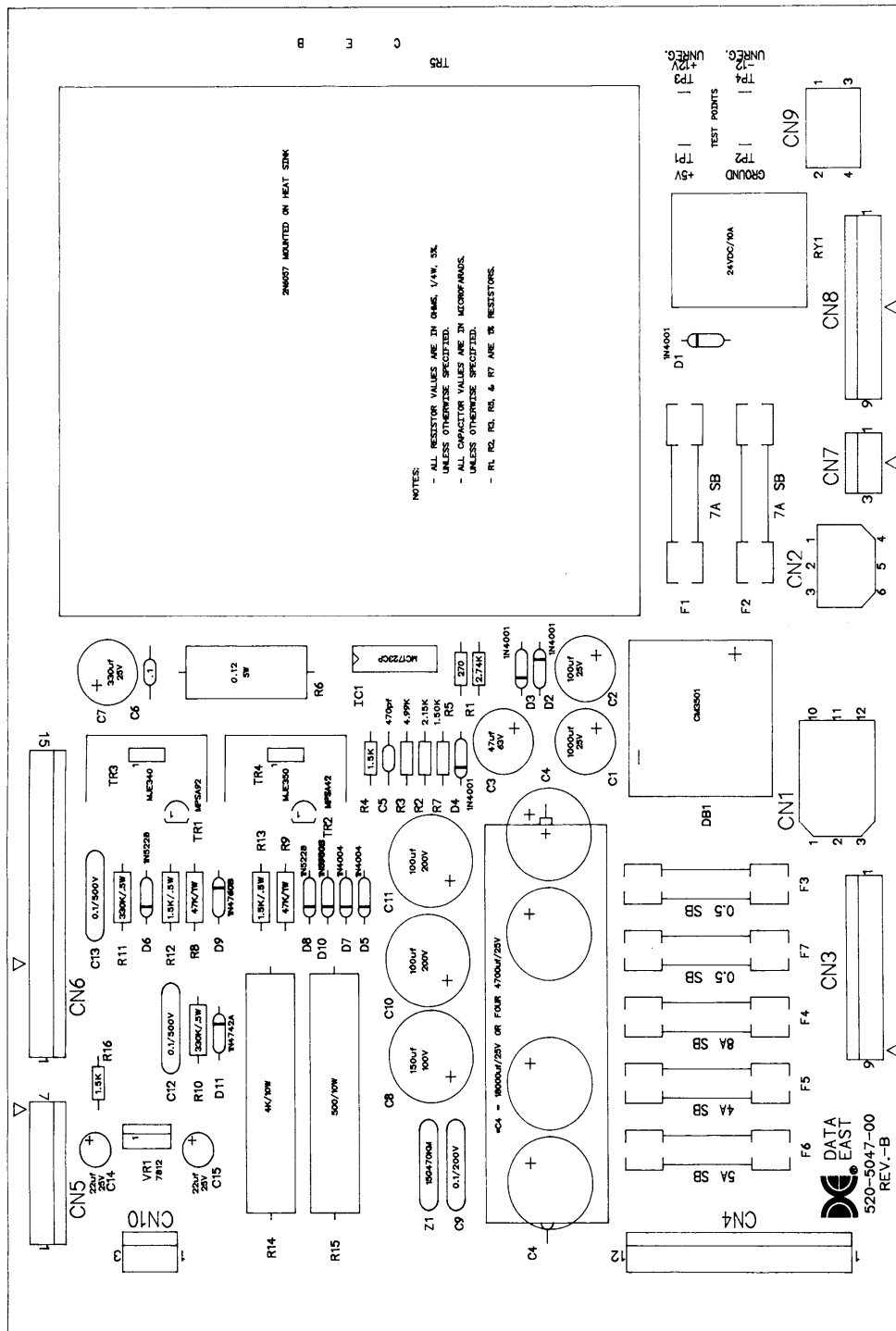


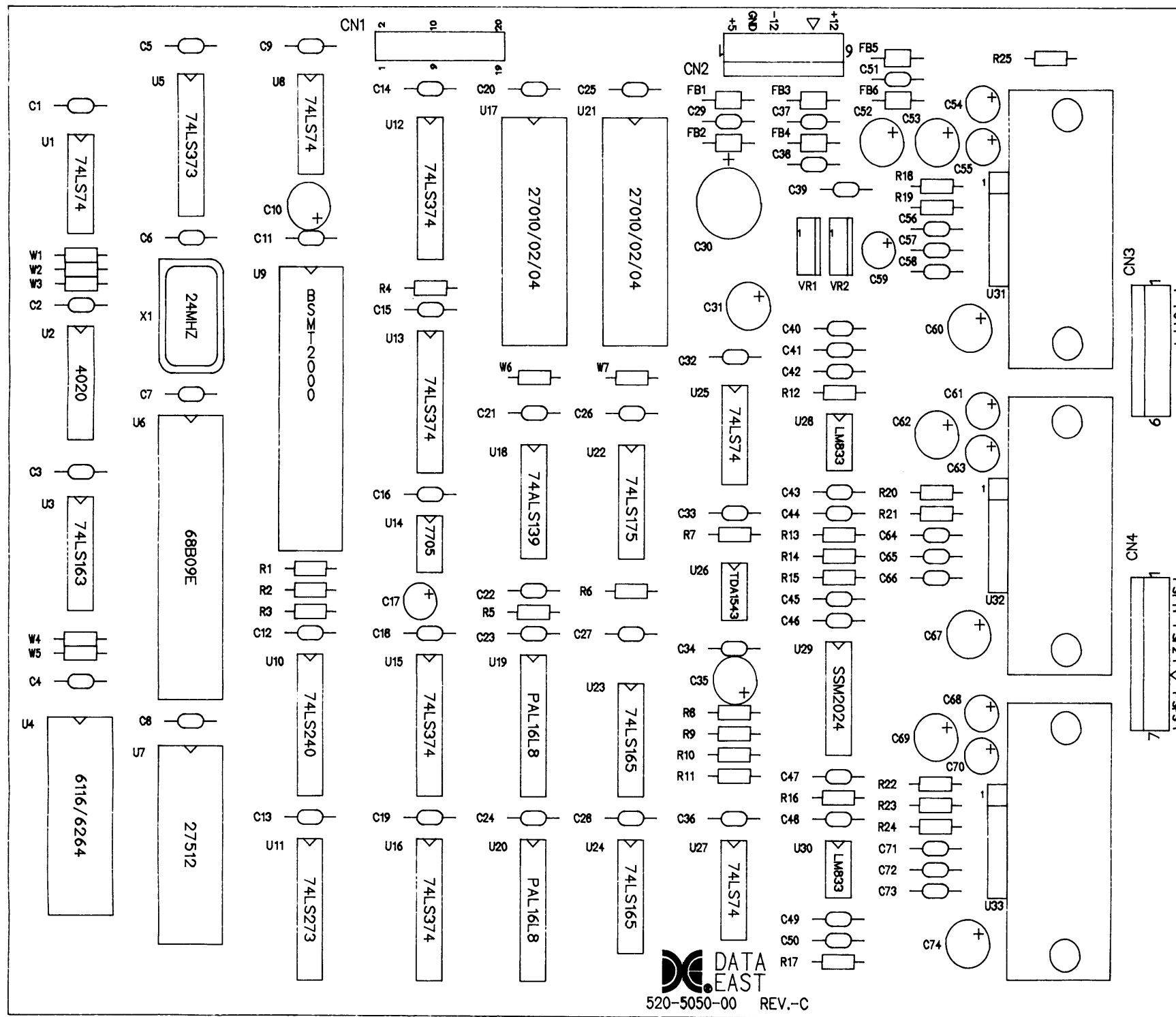


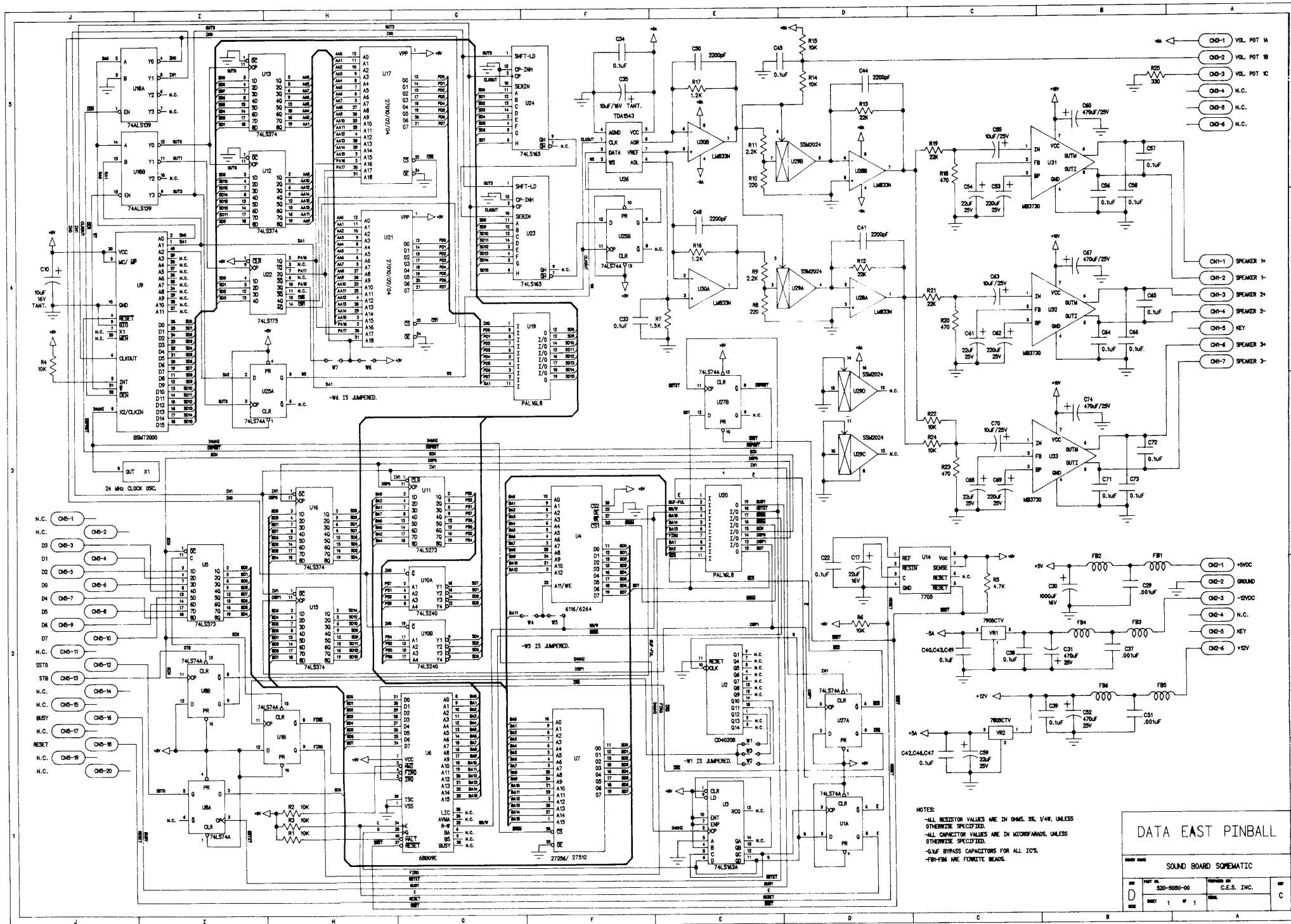




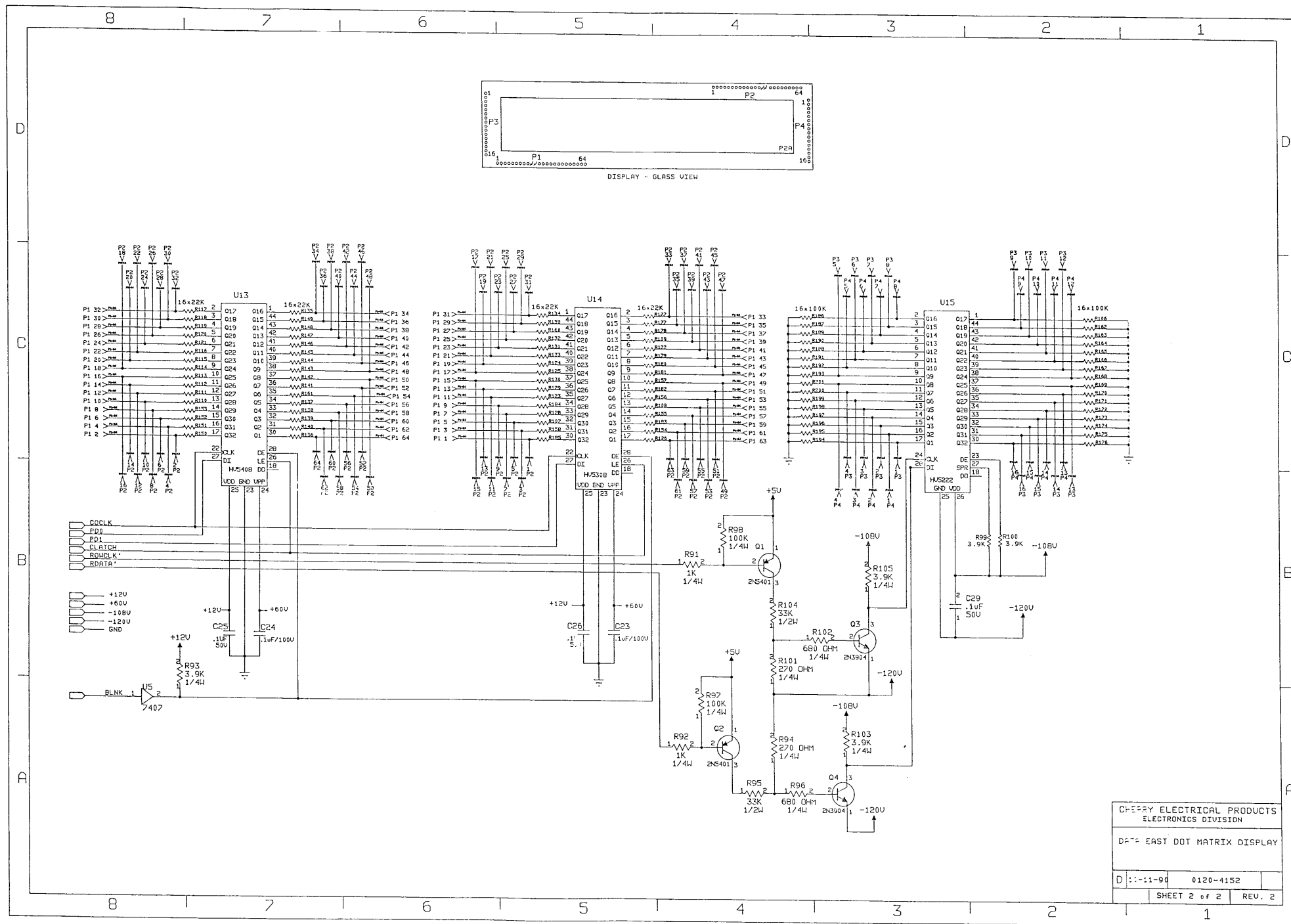












|                              |           |
|------------------------------|-----------|
| CHEERY ELECTRICAL PRODUCTS   |           |
| ELECTRONICS DIVISION         |           |
| DATA EAST DOT MATRIX DISPLAY |           |
| D 11-90                      | 0120-4152 |
| SHEET 2 of 2                 | REV. 2    |





## Theory of Operation for the Solid State Flippers

- The solid state flipper board is a dual 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 50V provides the actuation power to the flipper solenoid while the 8V provides the holding power.

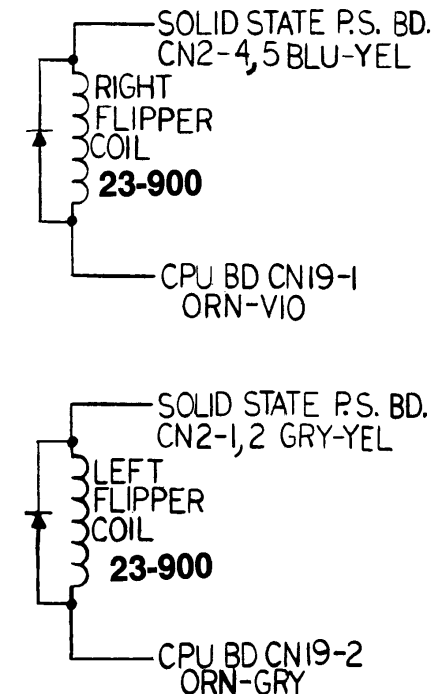
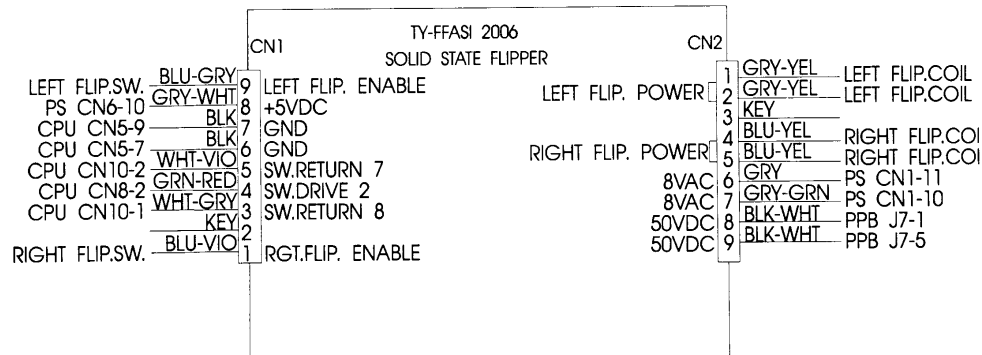
## Solid State Flippers PCB Wiring Diagram

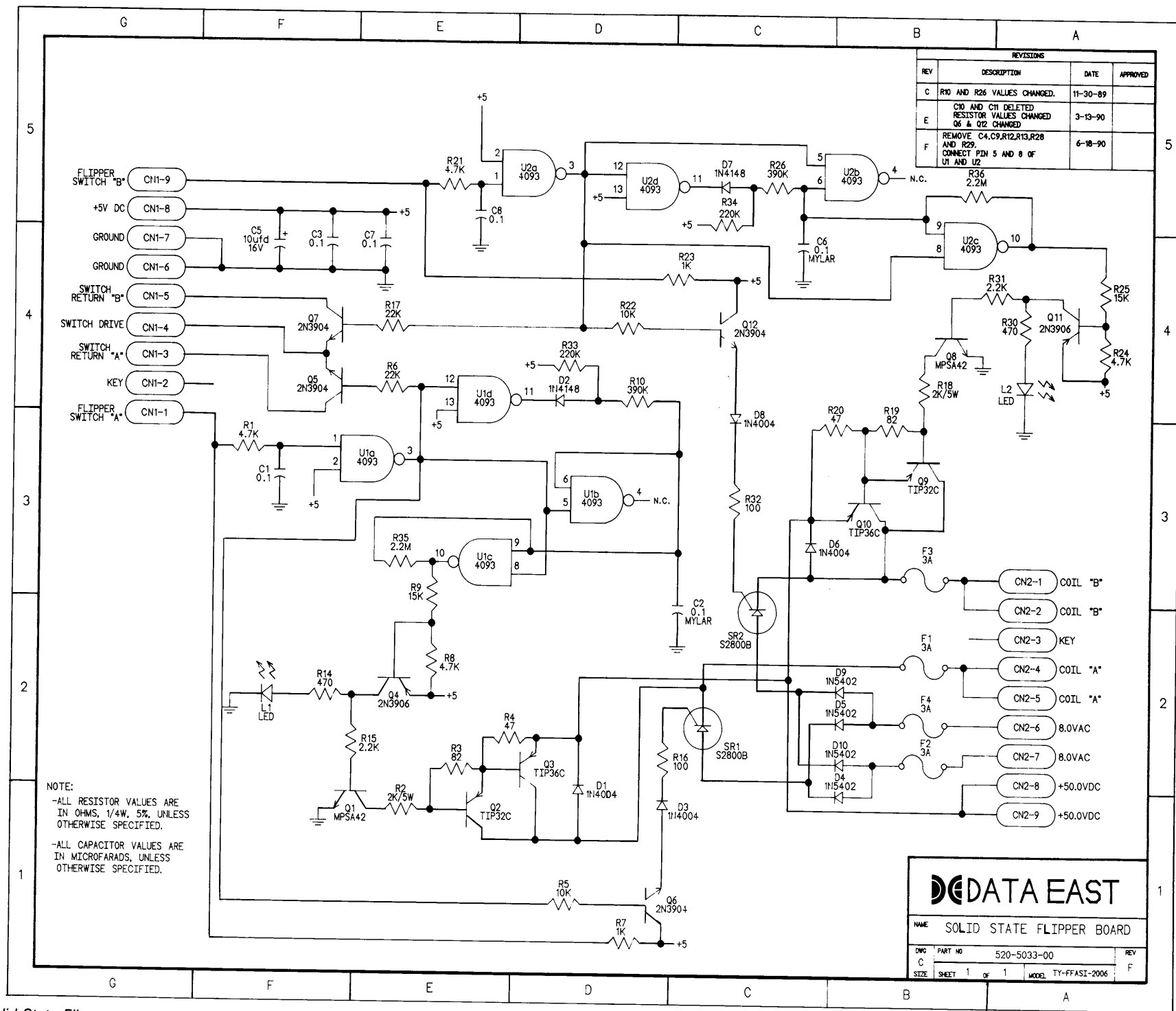
Connector CN 1

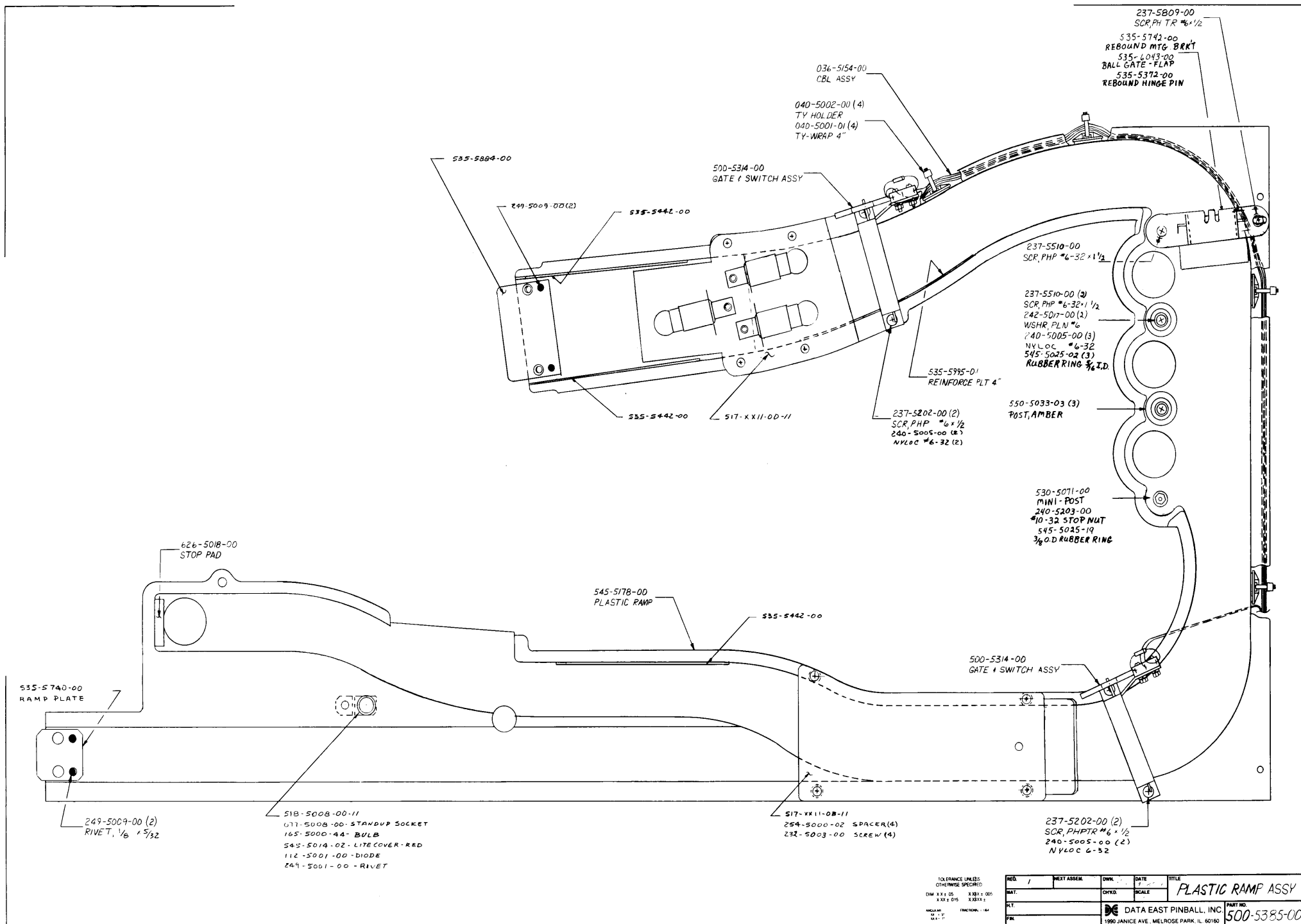
| Pin # | Goes To          | Wire Color | It Is            |
|-------|------------------|------------|------------------|
| 1     | Rgt. Flipper Sw. | BLU-VIO    | RGT. FLIP ENABLE |
| 2     |                  |            | KEY              |
| 3     | CPU CN10-1       | WHT-GRY    | SW. RET 8        |
| 4     | CPU CN8-2        | GRN-RED    | SW. DRV 2        |
| 5     | CPU CN10-2       | WHT-VIO    | SW. RET 7        |
| 6     | CPU CN5-7        | BLK        | GND              |
| 7     | CPU CN5-9        | BLK        | GND              |
| 8     | PS CN6-10        | GRY-WHT    | +5VDC            |
| 9     | Lft. Flipper Sw. | BLU-GRY    | LFT. FLIP ENABLE |

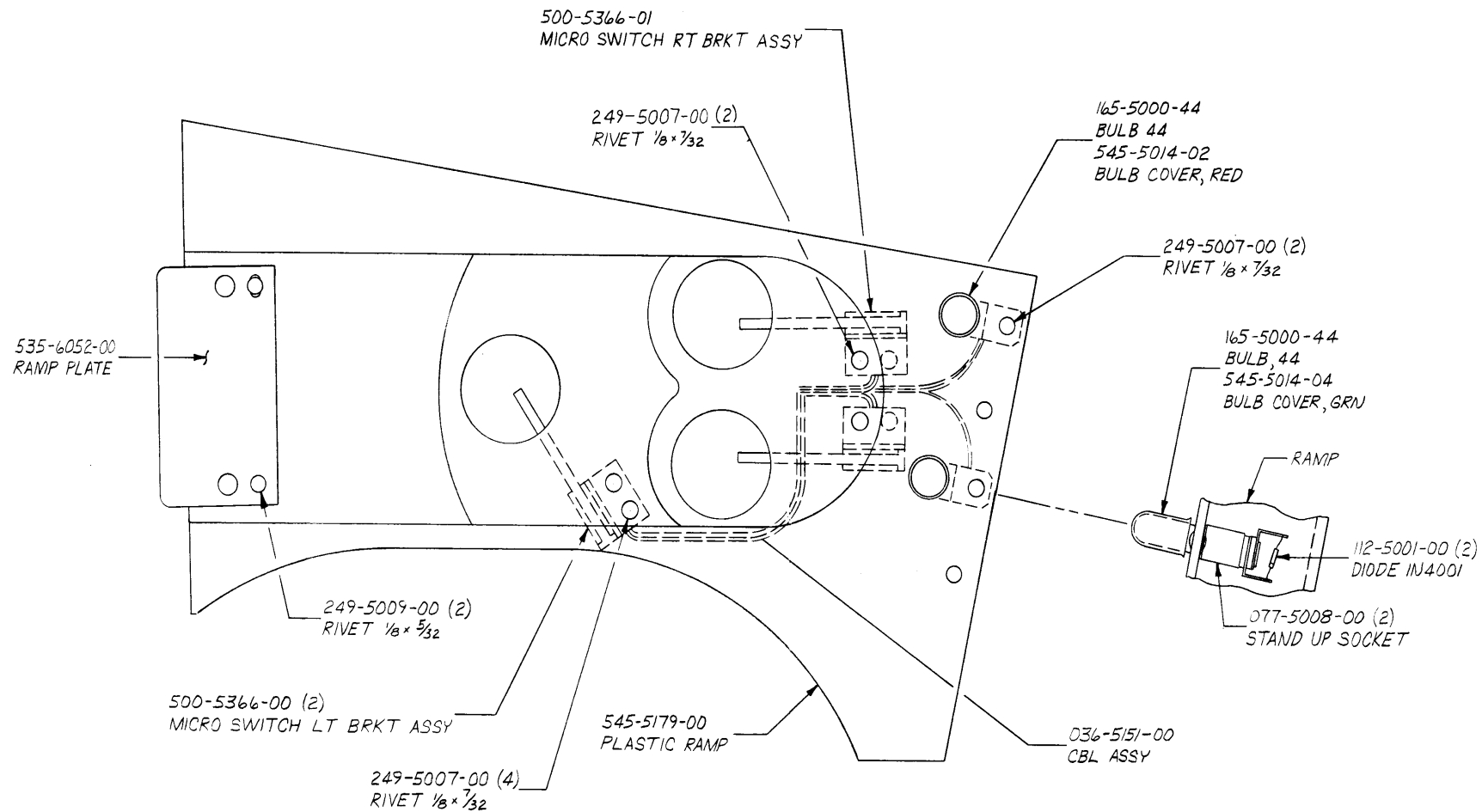
Connector CN 2

| Pin # | Goes To        | Wire Color | It Is           |
|-------|----------------|------------|-----------------|
| 1     | Lft. Flip Coil | GRY-YEL    | LFT. FLIP POWER |
| 2     | *****          | *****      | *****           |
| 3     | Rgt. Flip Coil | BLU-YEL    | RGT. FLIP POWER |
| 4     | *****          | *****      | *****           |
| 5     |                |            | KEY             |
| 6     | PS CN1-11      | GRY        | 9 VAC           |
| 7     | PS CN1-10      | GRY-GRN    | 9 VAC           |
| 8     | PPB J7-1       | BLK-WHT    | 50 VDC          |
| 9     | PPB J7-5       | BLK-WHT    | 50 VDC          |









TOLERANCE UNLESS  
OTHERWISE SPECIFIED

DIM XX ± .05    XXXX ± .005  
XX ± .015    XXXX ±

ANGULAR  
XX ± 5°  
XX ± 1°

FRACTIONAL ± 1/64

|                                                                     |              |           |              |                         |
|---------------------------------------------------------------------|--------------|-----------|--------------|-------------------------|
| REQ. 1                                                              | NEXT ASSEMB. | DWN. 1/18 | DATE 4-26-91 | TITLE                   |
| MAT.                                                                |              | CHKD.     | SCALE FULL   | JOKER RAMP ASSY         |
| HLT.                                                                |              |           |              |                         |
| FIN.                                                                |              |           |              |                         |
| DATA EAST PINBALL, INC.<br>1990 JANICE AVE., MELROSE PARK, IL 60160 |              |           |              | PART NO.<br>500-5388-00 |

BATMAN

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### **PRINTED CIRCUIT BOARDS (GAME LOGIC) 60 DAYS**

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