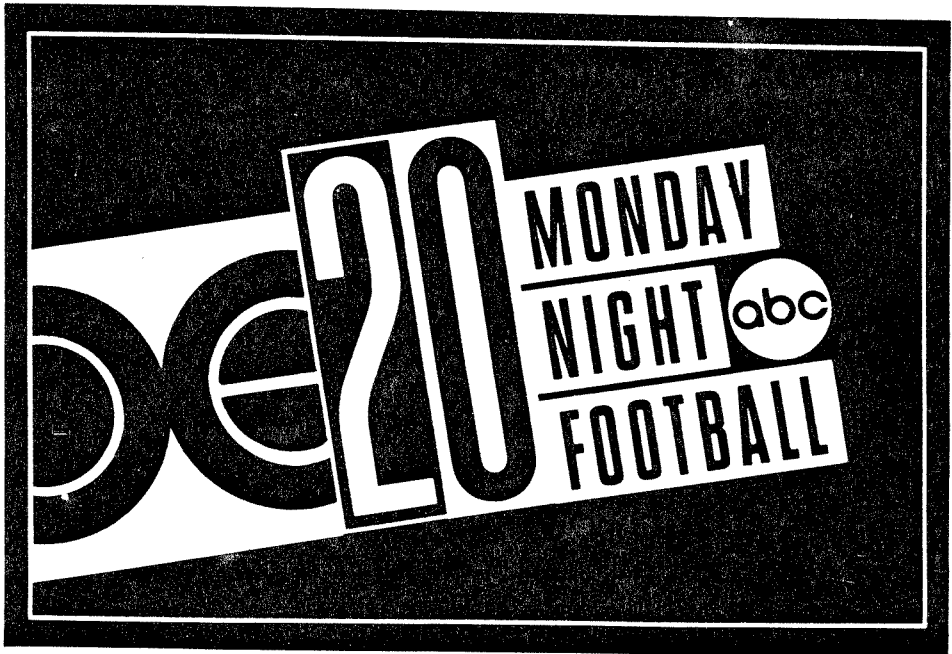




MONDAY NIGHT FOOTBALL



DATA EAST PINBALL

1990 Janice Avenue
Melrose Park, IL 60160
312-345-7700
FAX 312-345-7718
1-800-KICKERS

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780-5007-00

CPU JUMPER TABLE

| Game | CPU* Version | ROM 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 |

*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 | SUSPECT COMPONENT |
|-----------------|--------------------------|
| Stays On | One of the 6821 PIAs |
| Flashes 1 Time | 6064 RAM at location D5. |
| Flashes 2 Times | EPROM at location B5. |
| Flashes 3 Times | 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 3A 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 0.25A Slo-Blo Display Reg. Input (90VAC)
 F4 8A Slo-Blo Switched Illumination Buss (18VDC)
 F5 4A Slo-Blo Solenoid Buss (34VDC)
 F6 5A Slo-Blo Solenoid Buss (34VDC)

Game Adjustment Table

| Adjustment Number (Player 3) | Description (Players 1 & 2) | Factory Setting (Player 4) |
|------------------------------------|--------------------------------|-------------------------------|
| AD 01 | Replay/Manual | 15% |
| AD 02 | Start Replay/Level 1 Replay | 2,400,000 |
| AD 03 | Levels Replay/Level 2 Replay | 01 |
| AD 04 | Level 3 Replay | - |
| AD 05 | Level 4 Replay | - |
| AD 06 | Extra Easy Rules | OFF |
| AD 07 | Easy Rules | OFF |
| AD 08 | Factory Rules | ON |
| AD 09 | Hard Rules | OFF |
| AD 10 | Extra Hard Rules | OFF |
| AD 11 | Novelty Rules | OFF |
| AD 12 | 5 Ball Rules | OFF |
| AD 13 | Addaball Rules | OFF |
| AD 14 | Standard/Custom Pricing | USA 1 |
| AD 15 | Time Setting | - |
| AD 16 | Coin Reset | OFF |
| AD 17 | Audits Reset | OFF |
| AD 18 | Restore Hiscr | OFF |
| AD 19 | Expand Adjustments | OFF |
| E Ad 20 | Awards Replay | CREDITS |
| E Ad 21 | Awards Special | CREDITS |
| E Ad 22 | Match Feature | ON |
| E Ad 23 | Balls/Game | 03 |
| E Ad 24 | Warning Tilt | 01 |
| E Ad 25 | Maximum Extra Balls | 03 |
| E Ad 26 | Credits Limit | 30 |
| E Ad 27 | Scores Highest | ON |
| E Ad 28 | Credits High Score 1 | 03 |
| E Ad 29 | Credits High Score 2 | 00 |
| E Ad 30 | Credits High Score 3 | 00 |
| E Ad 31 | Credits High Score 4 | 00 |
| E Ad 32 | High Score 1 Backup | 5,000,000 |
| E Ad 33 | High Score 2 Backup | 4,000,000 |
| E Ad 34 | High Score 3 Backup | 3,000,000 |
| E Ad 35 | High Score 4 Backup | 2,500,000 |
| E Ad 36 | High Score Reset Every | 700 |
| E Ad 37 | Free Play | OFF |
| E Ad 38 | Left Coin Pulses | - |
| E Ad 39 | Right Coin Pulses | - |
| E Ad 40 | Center Coin Pulses | - |
| E Ad 41 | Pulses For Credit | - |
| E Ad 42 | Pulses For Bonus Credit | - |
| E Ad 43 | Message Custom | ON |
| E Ad 44 | Text | ENGLISH |
| E Ad 45 | Attract Mode Music | ON |
| E Ad 46 | Buy In Feature | ALL |
| E Ad 47 | Bozo Ball | ON |
| E Ad 48 | Flash Lamps | ON |
| E Ad 49 | General Scores | FACTORY |
| E Ad 50 | General Timer | FACTORY |
| E Ad 51 | Spots Lock Lit | ON |
| E Ad 52 | General Memory | ON |
| E Ad 53 | Bonus Lit | 14 |
| E Ad 54 | Ex Ball Lit | 28 |
| E Ad 55 | Special Lit | 49 |
| E Ad 56 | Yardage Memory | OFF |
| E Ad 57 | Lane Percent | FACTORY |
| E Ad 58 | Lane Extra Ball | ON |
| E Ad 59 | Alert Operator | ON |
| E Ad 60 | Factory Restore | OFF |

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.

Bad Switches

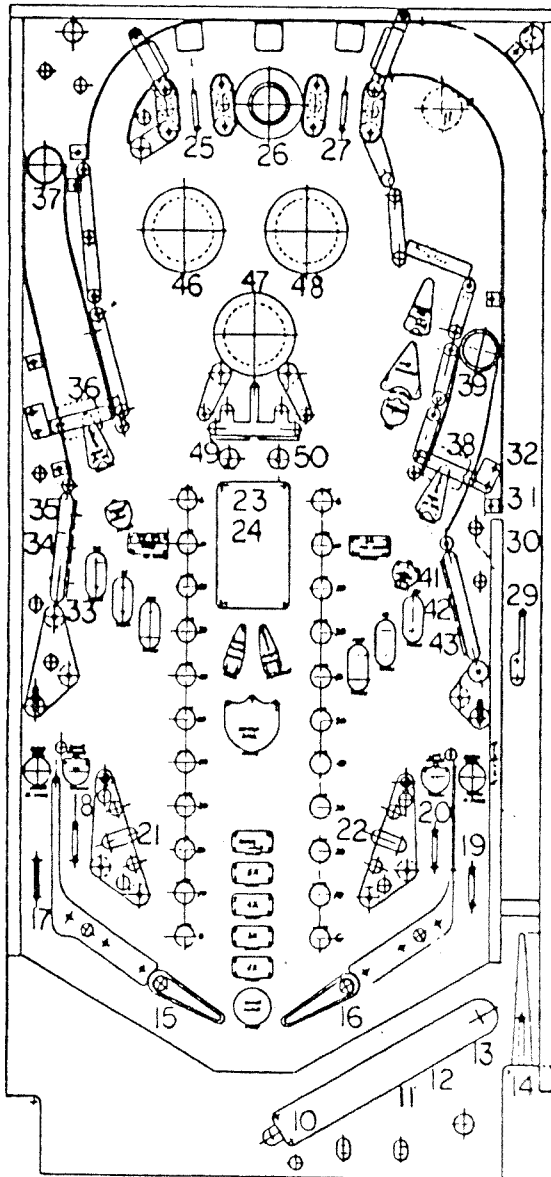
Operate the STEP push-button switch from the Switch Test. Player 1 and 2 Displays indicate BAD SWITCHES. During game play, the system keeps track of the last game in which each switch was made. Should a switch not be made for 100 games, it is considered to be bad. If there are any, the Player 1 and 2 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 the STEP push-button switch is depressed.

SWITCH MATRIX CHART

| COLUMN ROW (*) | 1 GRN-BRN (51) Q55 | 2 GRN-RED (52) Q54 | 3 GRN-ORN (53) Q53 | 4 GRN-YEL (54) Q52 | 5 GRN-BLK (50) Q51 | 6 GRN-BLU (56) Q50 | 7 GRN-VIO (57) Q49 | 8 GRN-GRY (58) Q48 |
|----------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|---------------------------|--------------------------|
| 1 WHT-BRN (91) | Plumb Tilt 1 | Not Used 9 | Left Outlane 17 | A Lane 25 | Left Bank 1 33 | Right Bank 1 41 | U Target 49 | Not Used 57 |
| 2 WHT-RED (92) | Not Used 2 | Outhole 10 | Left Return 18 | B Eject 26 | Left Bank 2 34 | Right Bank 2 42 | P Target 50 | Not Used 58 |
| 3 WHT-ORN (93) | Credit Button 3 | Trough #1 11 | Right Outlane 19 | C Lane 27 | Left Bank 3 35 | Right Bank 3 43 | Left Ramp Bottom 51 | Not Used 59 |
| 4 WHT-YEL (94) | Right Coin 4 | Trough #2 12 | Right Return 20 | Not Used 28 | Left Spinner 36 | Left Ramp Top 44 | Not Used 52 | Not Used 60 |
| 5 WHT-GRN (95) | Center Coin 5 | Trough #3 13 | Left Slingshot 21 | Kick-Off 10 Yards 29 | Left VUK 37 | Right Ramp 45 | Not Used 53 | Not Used 61 |
| 6 WHT-BLU (96) | Left Coin 6 | Shooter Lane 14 | Right Slingshot 22 | Kick-Off 20 Yards 30 | Right Spinner 38 | Left Pop Bumper 46 | Not Used 54 | Not Used 62 |
| 7 WHT-VIO (97) | Slam Tilt 7 | Left EOS 15 | Ramp Up 23 | Kick-Off 30 Yards 31 | Right Eject 39 | Center Pop Bumper 47 | Not Used 55 | Not Used 63 |
| 8 WHT-GRY (98) | Not Used 8 | Right EOS 16 | Ramp Down 24 | Kick-Off 40 Yards 32 | Not Used 40 | Right Pop Bumper 48 | Not Used 56 | Not Used 64 |

(*) 2 DIGIT NUMBER IN PARENTHESES INDICATES RESISTOR/WIRE COLOR CODE NUMBER DISPLAYED DURING DIAGNOSTICS.

| Number | Description | Part No. | Number | Description | Part No. |
|--------|---------------|-------------|--------|---------------------------|-------------|
| 01* | Plumb Tilt | 500-5023-00 | 10 | Out Hole | 180-5011-00 |
| 02 | Not Used | -- | 11 | Trough #1 | 180-5009-00 |
| 03 | Credit Button | 500-5097-00 | 12 | Trough #2 | 180-5009-00 |
| 04* | Right Coin | 180-5024-00 | 13 | Trough #3 | 180-5010-00 |
| 05* | Center Coin | 180-5024-00 | 14 | Shooter Lane | 500-5142-00 |
| 06* | Left Coin | 180-5024-00 | 15 | Left Flip. Instant Info. | 180-5026-00 |
| 07* | Slam Tilt | 180-5022-00 | | Left EOS | 180-5018-00 |
| 08 | Not Used | -- | 16 | Right Flip. Instant Info. | 180-5026-00 |
| 09 | Not Used | -- | | Right EOS | 180-5018-00 |



| | | |
|----|-----------------------------|-------------|
| 17 | Left Outlane | 500-5142-00 |
| 18 | Left Return Lane | 500-5142-00 |
| 19 | Right Outlane | 515-5133-00 |
| 20 | Right Return Lane | 515-5133-00 |
| 21 | Left Slingshot Trigger Sw. | 180-5054-00 |
| | Left Slingshot Point Sw. | 180-5055-00 |
| 22 | Right Slingshot Trigger Sw. | 180-5054-00 |
| | Right Slingshot Point Sw. | 180-5055-00 |
| 23 | Ramp Up | 180-5056-00 |
| 24 | Ramp Down | 180-5056-00 |
| 25 | A Lane | 500-5142-00 |
| 26 | B Eject | 515-5079-00 |
| 27 | C Lane | 500-5142-00 |
| 28 | Not Used | -- |
| 29 | Kick-Off 10 Yards | 515-5138-00 |
| 30 | Kick-Off 20 Yards | 515-5138-00 |
| 31 | Kick-Off 30 Yards | 515-5138-00 |
| 32 | Kick-Off 40 Yards | 515-5138-00 |
| 33 | Left Bank 1 (Top) | 180-5025-01 |
| 34 | Left Bank 2 (Center) | 180-5025-01 |
| 35 | Left Bank 3 (Bottom) | 180-5025-01 |
| 36 | Left Spinner | 500-5119-00 |
| 37 | Left VUK | 180-5041-00 |
| 38 | Right Spinner | 500-5193-00 |
| 39 | Right Eject | 515-5079-00 |
| 40 | Not Used | -- |
| 41 | Right Bank 1 (Top) | 180-5025-01 |
| 42 | Right Bank 2 (Center) | 180-5025-01 |
| 43 | Right Bank 3 (Bottom) | 180-5025-01 |
| 44 | Left Ramp Top | 180-5053-00 |
| 45 | Right Ramp | 180-5057-00 |
| 46 | Left Pop Bumper | 180-5036-00 |
| 47 | Center Pop Bumper | 180-5036-00 |
| 48 | Right Pop Bumper | 180-5036-00 |
| 49 | U Target | 515-5252-00 |
| 50 | P Target | 515-5252-00 |
| 51 | Left Ramp Bottom | 180-5053-00 |
| 52 | Not Used Thru 64 | |

Switch Locations

*INDICATES CABINET SWITCHES.

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 Bad 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. Player 1 and 2 displays indicate LAMP ROWS and the Player 4 display indicates 01 for row 1. 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 ROWS test, depress the STEP push-button switch. Player 1 and 2 displays indicate LAMP COLUMNS and the Player 4 display indicates 01 for column 1. All controlled lamps in column 1 should be lit. Operating the Game Start push-button switch, cycles through each of the columns separately.

Discrete Lamp

From the LAMP COLUMNS test, depress the STEP push-button switch. Player 1 and 2 displays indicate LAMP TEST and then the name assigned to lamp 01; the Player 1 and 2 displays indicate the lamp name, the Player 3 display indicates the row and column wire colors, and the Player 4 display indicates 01. 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.

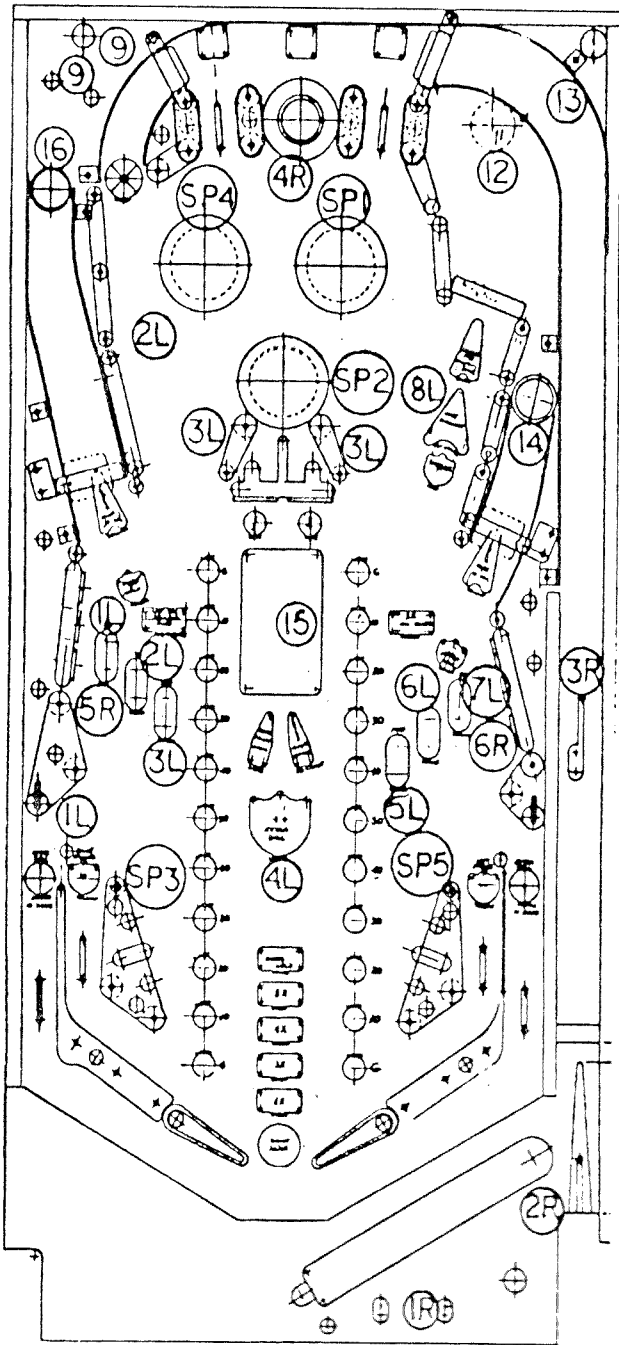
LAMP MATRIX CHART

| ROW (*) | 1 YEL-BRN (41) Q71 | 2 YEL-RED (42) Q70 | 3 YEL-ORN (43) Q69 | 4 YEL-BLK (40) Q68 | 5 YEL-GRN (45) Q67 | 6 YEL-BLU (46) Q66 | 7 YEL-VIO (47) Q65 | 8 YEL-GRY (48) Q64 |
|-----------------------|--------------------------|----------------------------|--------------------------|--------------------------|--------------------------|----------------------------|-----------------------------|--------------------------|
| 1 RED-BRN (21) Q72 | 10 Yard Bottom 1 | Right Goal 9 | 5x 17 | A Lane 25 | 10 Yard Lamp 33 | Million Jackpot 41 | Back Panel Sacked 49 | Top Special 57 |
| 2 RED-BLK (20) Q73 | 2x 2 | 20 Yard Bottom 10 | Bonus Hold 18 | B Eject 26 | 20 Yard Lamp 34 | Jackpot 1 42 | Back Panel 10 Yard 50 | Top Million 58 |
| 3 RED-ORN (23) Q74 | 3x 3 | Shoot Again 11 | 30 Yard Bottom 19 | C Lane 27 | 30 Yard Lamp 35 | Jackpot 2 43 | Back Panel 20 Yard 51 | Right Release 59 |
| 4 RED-YEL (24) Q75 | 4x 4 | Left Goal 12 | Left Bank 100k 20 | 40 Yard Bottom 28 | 40 Yard Lamp 36 | Jackpot 3 44 | Back Panel 30 Yard 52 | Jackpot 4 60 |
| 5 RED-GRN (25) Q76 | Right Return 5 | Right Bank 100k 13 | Left Bank 75k 21 | Top Goal 29 | 50 Yards 37 | Center Extra Ball 45 | Back Panel 40 Yard 53 | Jackpot 5 61 |
| 6 RED-BLU (26) Q77 | Right Extra Ball 6 | Right Bank 75k 14 | Left Bank 50k 22 | Left Ball Lock 30 | Right Arrow 38 | 40 Yard Top 46 | Back Panel 50 Yard 54 | Jackpot 6 62 |
| 7 RED-VIO (27) Q78 | Left Extra Ball 7 | Right Bank 50k 15 | Bonus Shield 23 | U Target 31 | Left Arrow 39 | Right Goal 47 | 30 Yard Top 55 | 10 Yard Top 63 |
| 8 RED-GRY (28) Q79 | Left Return 8 | Extra Ball Shield 16 | Goal Targets 24 | P Target 32 | 10 Yard Top 40 | 2x Scores 48 | Right Ball Lock 56 | 20 Yard Top 64 |

(*) 2 DIGIT NUMBER IN PARENTHESES INDICATES RESISTOR WIRE COLOR CODE DISPLAYED DURING DIAGNOSTICS.

| Lamp Number | Description |
|-------------|------------------|
| 01 | 10 Yard Bottom |
| 02 | 2x |
| 03 | 3x |
| 04 | 4x |
| 05 | Right Return |
| 06 | Right Extra Ball |
| 07 | Left Extra Ball |
| 08 | Left Return |
| 09 | Right Goal |
| 10 | 20 Yard Bottom |

| | |
|-----|--------------------|
| 11 | Shoot Again |
| 12 | Left Goal |
| 13 | Right Bank 100k |
| 14 | Right Bank 75k |
| 15 | Right Bank 50k |
| 16 | Extra Ball Shield |
| 17 | 5x |
| 18 | Bonus Hold |
| 19 | 30 Yard Bottom |
| 20 | Left Bank 100k |
| 21 | Left Bank 75k |
| 22 | Left Bank 50k |
| 23 | Bonus Shield |
| 24 | Goal Targets |
| 25 | A Lane |
| 26 | B Eject |
| 27 | C Lane |
| 28 | 40 Yard Bottom |
| 29 | Top Goal |
| 30 | Left Lock Ball |
| 31 | U Target |
| 32 | P Target |
| 33 | 10 Yard Lamp |
| 34 | 20 Yard Lamp |
| 35 | 30 Yard Lamp |
| 36 | 40 Yard Lamp |
| 37 | 50 Yards |
| 38 | Right Arrow |
| 39 | Left Arrow |
| 40 | 10 Yard Top |
| 41* | Million Jackpot |
| 42* | Jackpot 1 |
| 43* | Jackpot 2 |
| 44* | Jackpot 3 |
| 45 | Center Extra Ball |
| 46 | 40 Yard Top |
| 47 | Right Goal |
| 48 | 2x Scores |
| 49 | Back Panel Sacked |
| 50 | Back Panel 10 Yard |
| 51 | Back Panel 20 Yard |
| 52 | Back Panel 30 Yard |
| 53 | Back Panel 40 Yard |
| 54 | Back Panel 50 Yard |
| 55 | 30 Yard Top |
| 56 | Right Ball Lock |
| 57 | Top Special |
| 58 | Top Million |
| 59 | Right Release |
| 60* | Jackpot 4 |
| 61* | Jackpot 5 |
| 62* | Jackpot 6 |
| 63 | 10 Yard Top |
| 64 | 20 Yard Top |



Lamp Locations

*Indicates Insert Lamp

COIL TESTS

Sixteen regular (pulsed under microprocessor control) and six switch-triggered coil drivers are provided to switch ground to coils. Coil number 10 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". Coil number 10 is located on the PPB board which provides isolation diodes and current limiting resistors. This effectively provides 23 regular coils.

Automatic Test

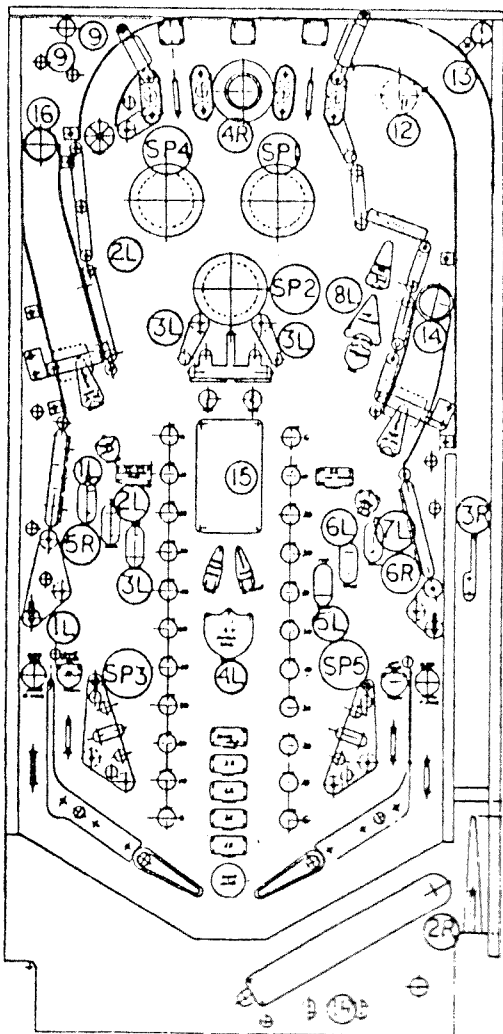
From the Discrete Lamps test, depress the STEP push-button switch. Player 1 and 2 displays indicate COIL TEST. The test pulses each regular solenoid or flash lamp sequentially with the coil/flash lamp name indicated in the Player 1 and 2 displays and the drive number in the Player 4 display.

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 drive 1L, the drive number is indicated in the Player 4 display. Operate the Game Start 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 STEP 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 one time if a selected coil is pulsing or two times if none is pulsing. The game returns to the game-over mode.



SWITCH TRIGGERED SOLENOIDS

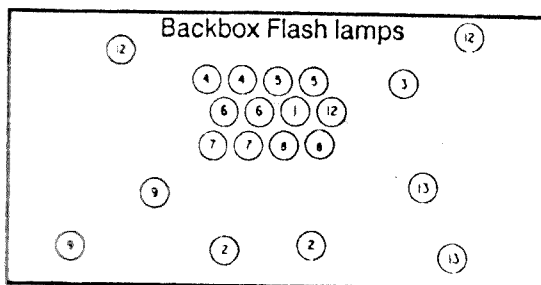
| Coil Number | Coil Description | Control Line (CPU to Coil) | Power Line (PS to Coil) | Trigger Line (Coil Sw to CPU) | Drive Transistor (TRP 122) | Coil Type |
|-------------|-------------------|----------------------------|-------------------------|-------------------------------|----------------------------|-----------|
| SP1 | Right Pop Bumper | BLU-ORN CPU CN19-3 | RED PS CN3-8 | ORN-BLK CPU CN 18-2 | Q8 | 23-800 |
| SP2 | Center Pop Bumper | BLU-RED CPU CN19-4 | RED PS CN3-8 | ORN-RED CPU CN 18-3 | Q9 | 23-800 |
| SP3 | Left Slingshot | BLU-YEL CPU CN19-6 | RED PS CN3-8 | ORN-YEL CPU CN 18-4 | Q10 | 23-800 |
| SP4 | Left Pop Bumper | BLU-BRN CPU CN19-7 | RED PS CN3-8 | ORN-BRN CPU CN 18-5 | Q11 | 23-800 |
| SP5 | Right Slingshot | BLU-GRN CPU CN19-8 | RED PS CN3-8 | ORN-GRN CPU CN 18-8 | Q12 | 23-800 |
| SP6 | NOT USED | - CPU CN19-9 | - PS CN3-9 | - CPU CN 18-9 | Q13 | - |

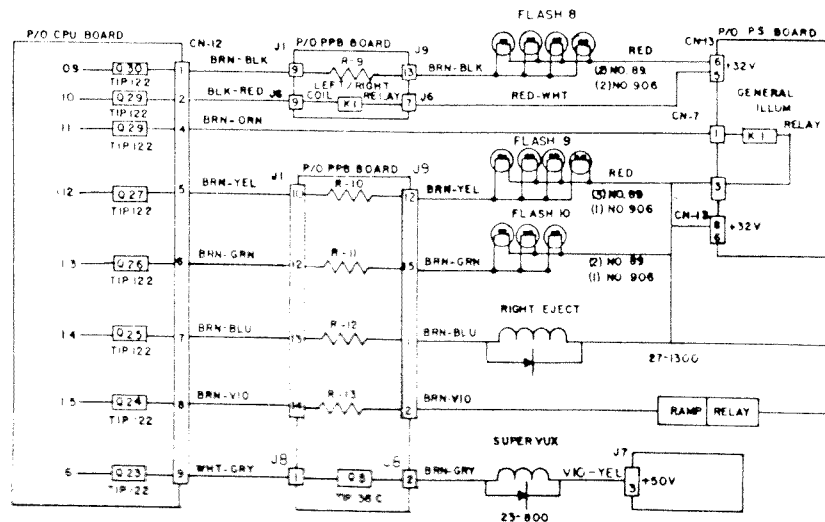
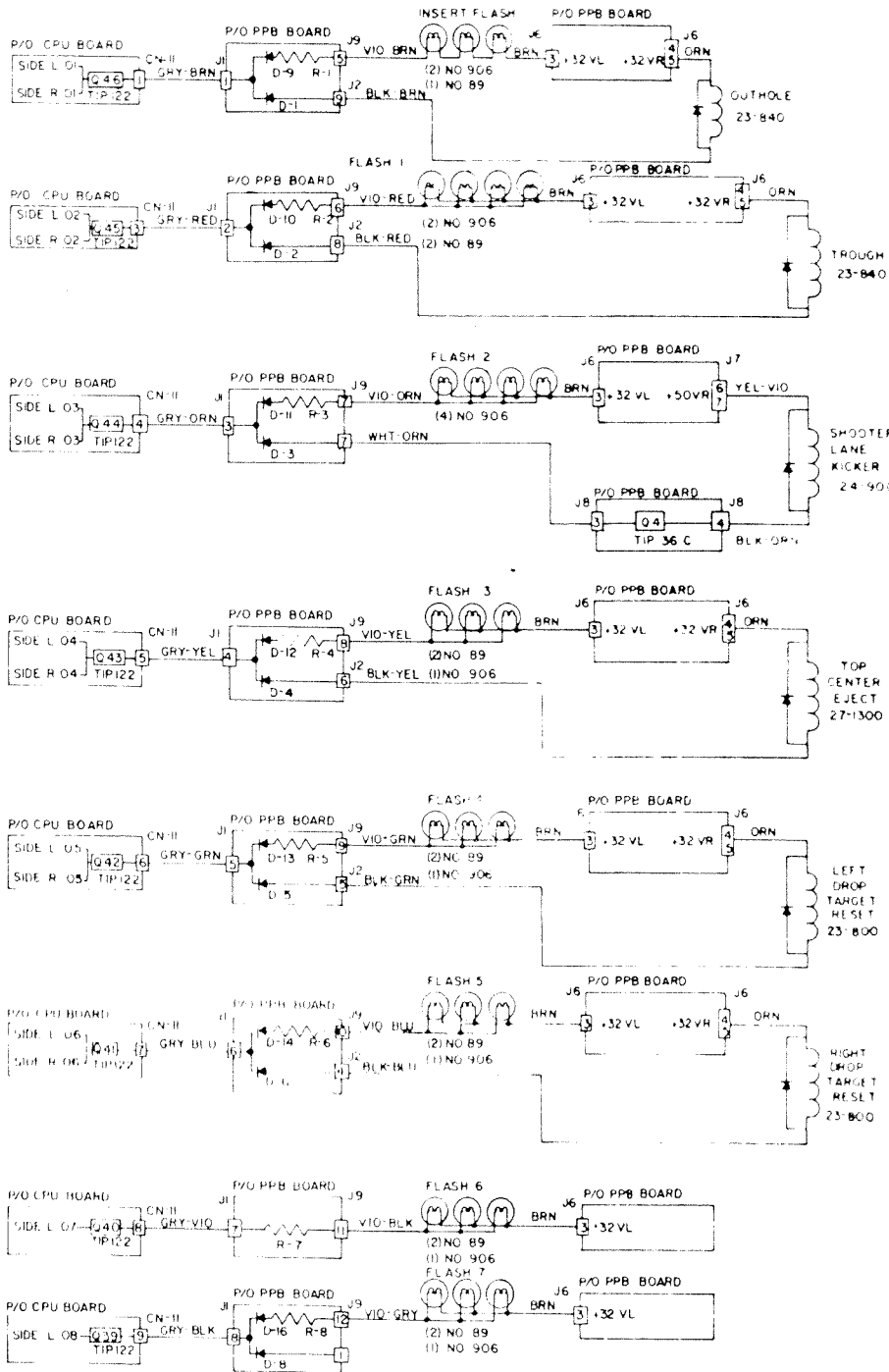
FLIPPER SOLENOIDS

| Coil Description | Flipper GND (CPU to Cab) | Flipper GND (Cab to Coil) | Power Lines (PPB & PS to Coil) | Coil Type |
|------------------|--------------------------|---------------------------|--|-----------|
| Left Flipper | ORN-GRY CPU CN19-2 | BLU-GRY 1W/F-24 | GRY-YEL PPB J7-5 GRY-GRN PS CN1-10 | 22-900 |
| Right Flipper | ORN-VIO CPU CN19-1 | BLU-VIO 1W/F-21 | BLK-WHT PPB J7-1,2 GRY-GRN PS CN1-10 50VDC 9VAC | 22-900 |

ABC M.N. FOOTBALL COIL PART NUMBER CHART

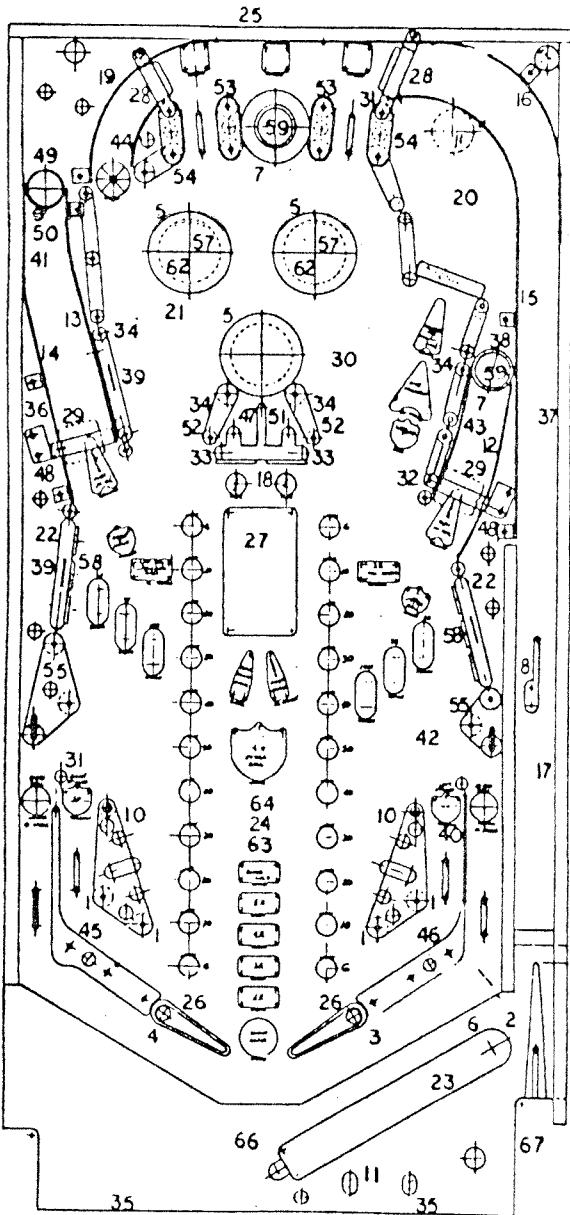
| QUANTITY USED | COIL TYPE | DATA EAST PINBALL PART NUMBER |
|---------------|-----------|-------------------------------|
| 8 | 23-800 | 090-5001-00 |
| 1 | 24-900 | 090-5002-00 |
| 2 | 27-1300 | 090-5003-00 |
| 2 | 23-840 | 090-5005-00 |
| 2 | 22-900 | 090-5020-21 |



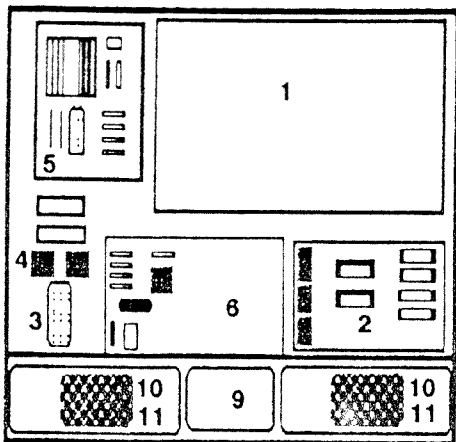


Playfield Top Parts

| Item | Description | Part Number |
|------|------------------------------|-------------|
| 1. | Acorn Nuts (26) | 240-5000-00 |
| 2. | Ball Feed Cam | 500-5012-00 |
| 3. | Right Flipper Assy. | 500-5031-51 |
| 4. | Left Flipper Assy. | 500-5031-52 |
| 5. | Pop Bumpers (3) | 500-5034-10 |
| 6. | #3 Ball Trough Eject | 500-5042-00 |
| 7. | Ball Eject Assy. (2) | 500-5051-00 |
| 8. | Kick Big Assy. | 500-5053-00 |
| 9. | Vertical Up Kicker Assy. | 500-5067-00 |
| 10. | Slingshot Assy.(2) | 500-5077-00 |
| 11. | Outhole Ball Return Assy. | 500-5082-00 |
| 12. | Right Eject Ball Guide | 500-5164-00 |
| 13. | Left VUK Ball Guide | 500-5165-00 |
| 14. | Left VUK Ball Guide | 500-5166-00 |
| 15. | Kickbig Inside Ball Guide | 500-5167-00 |
| 16. | Top Ball Guide | 500-5168-00 |
| 17. | Shooter Lane Ramp Assy. | 500-5170-00 |
| 18. | Two Standup Target Assy. | 500-5176-00 |
| 19. | Top Arch Vacu-form Assy. | 500-5179-00 |
| 20. | Bomb Ramp Assy. | 500-5184-00 |
| 21. | Touchdown Ramp Assy. | 500-5185-00 |
| 22. | Drop Target Assy.(2) | 500-5187-00 |
| 23. | Ball Trough Sw. Plate Assy. | 500-5190-00 |
| 24. | Playfield Complete | 505-6004-00 |
| 25. | Back Panel Assy.Complete | 505-6007-07 |
| 26. | Flipper Bat & Shaft | 515-5133-02 |
| 27. | Field Goal & Ex. Point Ramp | 515-5196-00 |
| 28. | Flap Gate (2) | 515-5205-00 |
| 29. | Spinner Target (2) | 515-5236-00 |
| 30. | Relay Board | 520-5010-00 |
| 31. | Wood Screw Mini-Post (2) | 530-5004-00 |
| 32. | Machine Screw Mini-Post | 535-5005-00 |
| 33. | Machine Bumper Post (7) | 530-5007-00 |
| 34. | Metal Standoff -Groove (18) | 530-5035-00 |
| 35. | Playfield Hanger Brkt. (2) | 525-5216-00 |
| 36. | Left Playfield Hinge | 535-5222-00 |
| 37. | Right Playfield Hinge | 535-5223-00 |
| 38. | Right Eject Ball Stop Brkt. | 535-5273-00 |
| 39. | 1" Wire Form (4) | 535-5300-05 |
| 40. | 3 3/4 " Wire Form | 535-5300-06 |
| 41. | VUK Wire Ramp Feed | 535-5342-01 |
| 42. | Bomb Wire Ramp | 535-5369-00 |
| 43. | Right Eject Wire Guide | 535-5370-00 |
| 44. | Top Left Wire Form | 535-5371-00 |
| 45. | Left Return Ball Guide | 535-5406-01 |
| 46. | Right Return Ball Guide | 535-5407-01 |
| 47. | Ramp Support | 535-5736-00 |
| 48. | Spinner Support Brkt.(2) | 535-5744-01 |
| 49. | VUK Ball Stop Brkt. | 535-5744-01 |
| 50. | VUK Rmp.Feed Support | 535-5753-00 |
| 51. | Center Two Tgt. Cover | 535-5755-00 |
| 52. | Red Mini Mars (7) | 545-5004-02 |
| 53. | 2 Sided Light Hood (2) | 545-5011-02 |
| 54. | 1 Sided Light Hood (2) | 545-5012-02 |
| 55. | Red 1 1/32 Jeweled Post (26) | 545-5013-02 |
| 56. | Red Lamp Cover (4) | 545-5014-02 |
| 57. | Pop Bumper Cap (2) | 545-5035-32 |
| 58. | Drop Target (6) | 545-5048-01 |
| 59. | Yellow Eject Hole (2) | 545-5060-06 |
| 60. | Ramp Decal Sheet | 820-5027-XX |
| 61. | Target Decal Sheet | 820-5107-00 |
| 62. | Pop Bumper Decal (2) | 820-5307-00 |
| 63. | Playfield Mylar | 820-5806-00 |
| 64. | Screened Playfield | 830-5107-00 |
| 65. | Screened Plastic Set | 830-5408-00 |
| 66. | Bottom Arch | 830-5507-01 |
| 67. | Shooter Gauge | 830-5507-02 |



BACKBOX PARTS ILLUSTRATION

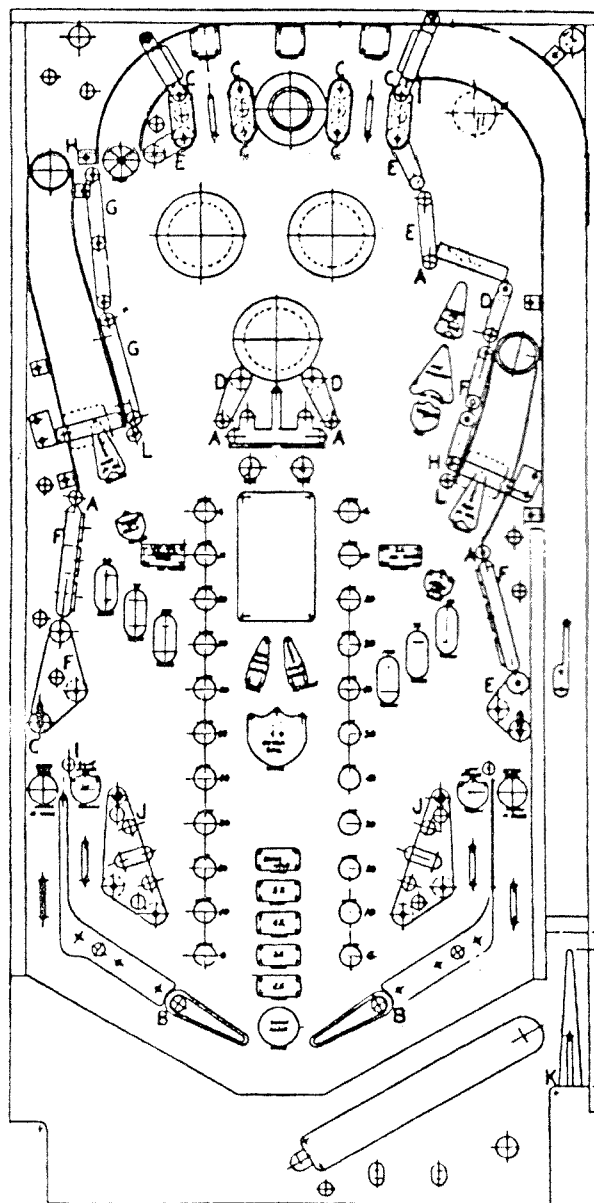


| Item | Description | Part No. |
|------|---------------------------|-------------|
| 1 | CPU Board Assy. | 520-5003-07 |
| 2 | Sound Board Assy | 520-5002-07 |
| 3 | Capacitor 2C1 | 125-5000-00 |
| 4 | Bridge Rectifiers | 112-5000-00 |
| 5 | Power Supply Bd. Assy | 520-5000-00 |
| 6 | PPB Board | 520-5021-05 |
| 7 | Combined Display Bd Assy* | 520-5030-00 |
| 8 | Display Ribbon Cable* | 036-5001-30 |
| 9 | Speaker Housing | 500-5133-05 |
| 10 | Speakers (2) | 031-5003-00 |
| 11 | Speaker Grill (2) | 545-5086-00 |
| 12 | Back Box Glass* | 830-5207-00 |

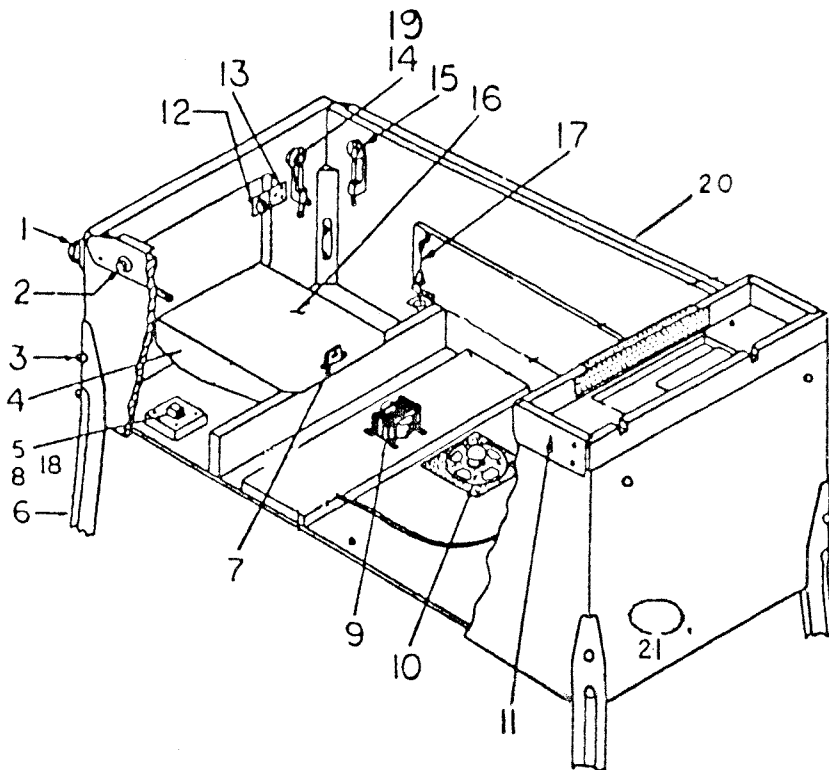
* Not Shown

RUBBER PARTS ILLUSTRATION

| Item | Description | Part # |
|------|--------------------------|-------------|
| A. | Black Rubber Post (5) | 545-5009-00 |
| B. | Red Flipper (2) | 545-5024-02 |
| C. | 5/16" (7) | 545-5025-02 |
| D. | 3/4" (3) | 545-5025-04 |
| E. | 1" (4) | 545-5025-05 |
| F. | 1 1/2" (4) | 545-5025-07 |
| G. | 2" (2) | 545-5025-08 |
| H. | 7/16" Outer Diameter (2) | 545-5025-17 |
| I. | 3/8" Outer Diameter (2) | 545-5025-19 |
| J. | 2 3/4" (2) | 545-5025-20 |
| K. | Shooter Tip (1) | 545-5027-00 |
| L. | Conical Rubber (2) | 545-5150-00 |

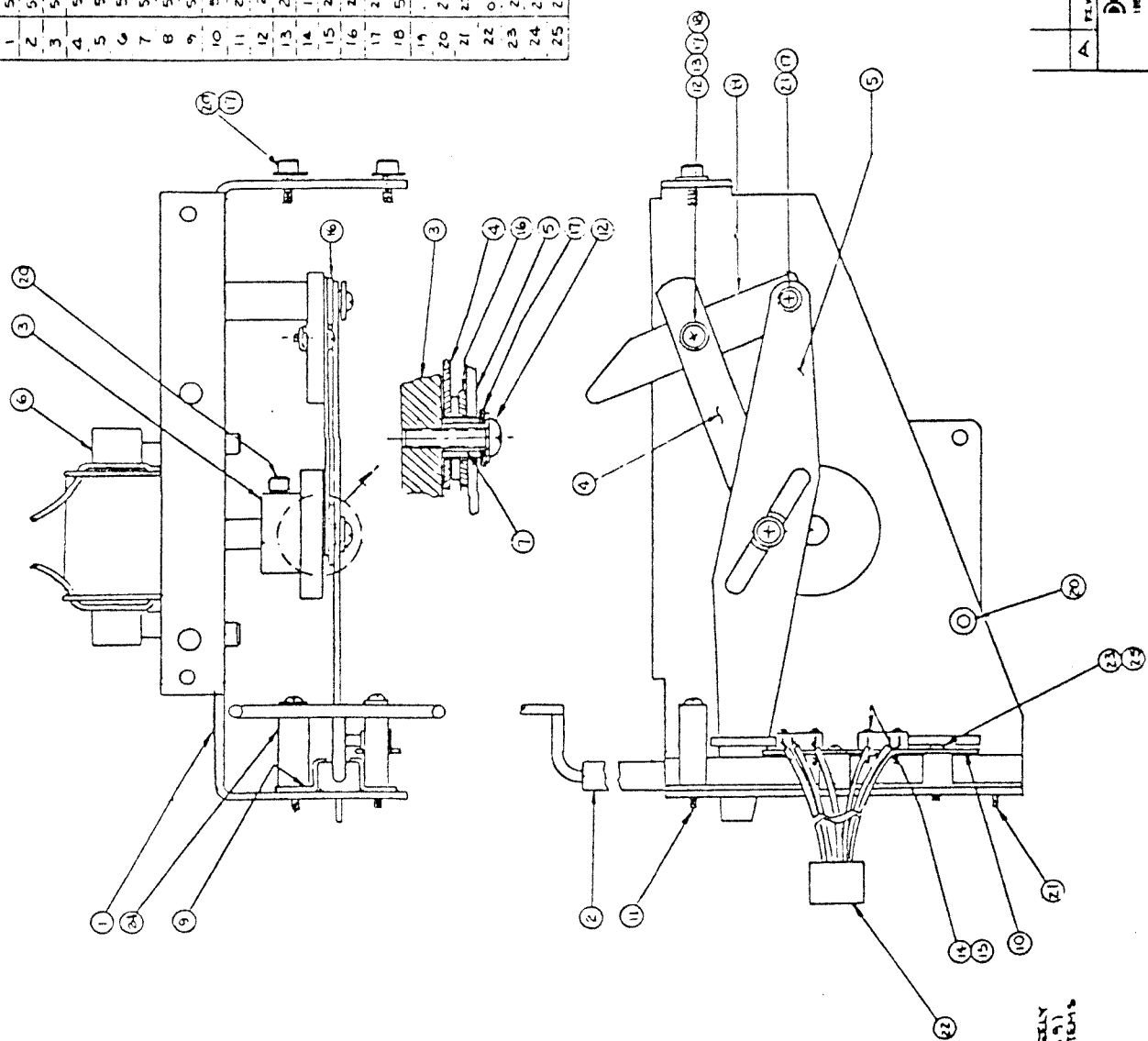


CABINET PARTS ILLUSTRATION



| Item | Description | Part No. |
|------|----------------------------------|-------------|
| 1 | Ball-shooter Assy | 500-5019-04 |
| 2 | Flipper Button | 500-5026-02 |
| 3 | Leg Bolt (Chrome) | 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 | 515-5153-01 |
| 9 | Transformer | 010-5002-00 |
| 10 | Speaker-Round (6") | 031-5000-00 |
| 11 | Side Armor-Right | 535-5010-11 |
| 12 | Memory Protect Switch | 180-5000-00 |
| 13 | Memory Protect Switch Bracket | 535-5225-00 |
| 14 | Start Switch | 500-5026-02 |
| 15 | Tungston Switch-Flipper | 180-5048-00 |
| 16 | Cash Box Top | 535-5013-01 |
| 17 | Plumb Bob Tilt Mech. Assy | 500-5023-00 |
| 18 | Volume Control | 123-5000-00 |
| 19 | Playfield Glass (Tempered) | 660-5001-00 |
| 20 | Side Armor -Left | 535-5010-12 |
| 21 | Line Cord Receptacle | 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 |

| ITEM | PT. NO. | DESCRIPTION | QTY |
|------|-------------|---------------------------|-----|
| 1 | 545-522B-00 | BLKT-POST SUB ASSY | 1 |
| 2 | 515-5229-00 | GOAL POST-SUP ASSY | 1 |
| 3 | 535-5137-00 | DRIVE COUPLING | 1 |
| 4 | 535-5134-00 | RAMP-LIFT LINK | 1 |
| 5 | 535-5136-00 | GOAL POST-LIFT LINK | 1 |
| 6 | 515-5222-00 | MOTOR ASSY | 1 |
| 7 | 530-5089-01 | SPACER 3/16 THK | 1 |
| 8 | 545-5139-00 | LIFT CAM | 1 |
| 9 | 555-5135-04 | GUIDE BKT | 2 |
| 10 | 535-5163-00 | SWITCH MTC BKT | 1 |
| 11 | 237-5508-00 | SCR 1/4-32 X 1 1/4 | 2 |
| 12 | 237-5502-00 | SCR 1/4-32 X 1/2 | 2 |
| 13 | 240-5102-00 | NUT 1/4-32 NYLOC | 1 |
| 14 | 180-5056-00 | SWITCH | 2 |
| 15 | 237-5806-00 | SCREW 2.36 X 1/2 | 4 |
| 16 | 242-5008-00 | WASHER 3/8 O.D. 7/16 I.D. | 2 |
| 17 | 242-5010-00 | WASHER 1/2 O.D. 7/16 I.D. | 5 |
| 18 | 530-5009-02 | SPACER .01 THK | 1 |
| 19 | | | |
| 20 | 237-5845-00 | 500 HD CSCL 10-32 X 7/8 | 6 |
| 21 | 237-5501-00 | SCREW 1/4-32 X 3/8 | 3 |
| 22 | 036-5091-00 | CABLE ASSY | 1 |
| 23 | 254-5000-01 | SPACER | 2 |
| 24 | 254-5000-04 | SPACER | 2 |
| 25 | 232-5203-00 | SCREW 1/4-32 X 3/8 | 2 |



NOTE:
 1. ITEM 2 MUST MOVE FREELY
 WITHIN ITS GUIDES (ITEM 9)
 2. APPLY LOCOTIE (RED) TO ITEMS
 15, 11, 21, 20

REVIEWED: _____ DATE: _____

DATA EAST PINBALL, INC.
 1880 JAMICE AVE., MELROSE PARK, IL 60110

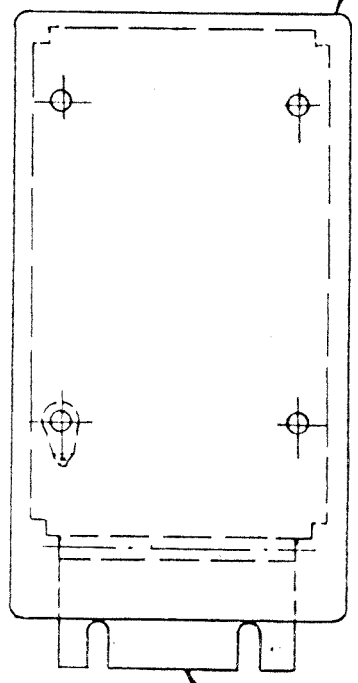
SCALE: 1:1 DRAWING NO: _____

DATE: 4-20-59 APPROVED BY: _____

GOAL POST TOP ASSY

500-5146-00

RAMP COVER
535-5124-00



HINGE
390-5003-00

RIVET SECURELY
4 PLACES
RIVET 249-5002-00
(3)

RAMP
535-5715-00

RIVET-249-
LJG-055-5140-08
WASHER-242-5001-00

-SPRING
265-5000-00

SPOT WELD
SECURELY

NOTE:
RAMP PLATE MUST LAY FLAT ON
RAMP, SHOWING NO DISTORTION DUE
TO RIVETING.

| REV | DESCRIPTION | BY | DATE | APP |
|-----|-------------|-----|---------|-----|
| A | ADD NOTE | JLL | 4-25-88 | |
| B | ADD SPRING | JLL | 5-19-89 | |

TOLERANCES UNLESS
OTHERWISE SPECIFIED
DIM IN: 25 XXX: .015
XXX: .015 XXX: .015
XXX: .015 XXX: .015
XXX: .015 XXX: .015

| REQ. | QTY | NEXT ASSEM. | OWN. | DATE | TITLE |
|------|-------|-------------|------|----------|---------------|
| 1 | 1 | 535-5124-00 | JLL | 12-12-88 | RAMP SUB ASSY |
| DATE | SCALE | CHKD. | | | |
| 11/1 | 1/1 | | | | |

PREPARED BY: KAREN LEON
DRAWN BY: ANDREW WELDON

DATA EAST PINBALL, INC.
1990 JANICE AVE. WELROSE PARK, IL 60760

PART NO.
515-5196-00