

Bally

JANUARY 1996
16-10206

ATTACK FROM MARS™



CE

Operatory Handbook

Midway Manufacturing Company, 3401 North California Avenue, Chicago, Illinois 60618

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MENU SYSTEM OPERATION

The Main Menu allows you to choose from several categories, which in turn lead to other menus. To access the Main Menu, open the coin door and press the Begin Test button, then press the Enter button. Press the Up or Down buttons to cycle through the Main Menu. Press the Enter button to access a menu. Press the Escape button to return to the Main Menu. Press the Start button for HELP at any time.

Main Menu

| | |
|----------------------------|--------------------------|
| B. Bookkeeping Menu | |
| | B.1 Main Audits |
| | B.2 Earnings Audits |
| | B.3 Standard Audits |
| | B.4 Feature Audits |
| | B.5 Histograms |
| | B.6 Time-Stamps |
| P. Printouts Menu | |
| | P.1 Earnings Data |
| | P.2 Main Audits |
| | P.3 Standard Audits |
| | P.4 Feature Audits |
| | P.5 Score Histograms |
| | P.6 Game Time Histograms |
| | P.7 Time-Stamps |
| | P.8 All Data |
| T. Test Menu | |
| | T.1 Switch Edges |
| | T.2 Switch Levels |
| | T.3 Single Switches |
| | T.4 Solenoid Test |
| | T.5 Flasher Test |
| | T.6 General Illumination |
| | T.7 Sound & Music Test |
| | T.8 Single Lamps |
| | T.9 All Lamps |
| | T.10 Lamp & Flasher Test |
| | T.11 Display Test |
| | T.12 Flipper Test |
| | T.13 Ordered Lamp Test |
| | T.14 Lamp Row-Col Test |
| | T.15 Dip Switch Test |
| | T.16 Loop/Gate Test |
| | T.17 Saucer LED Test |
| | T.18 Drop Target Test |
| | T.19 Motor Bank Test |
| | T.20 Empty Balls Test |
| U. Utilities Menu | |
| | U.1 Clear Audits |
| | U.2 Clear Coins |
| | U.3 Reset H.S.T.D. |
| | U.4 Set Time & Date |
| | U.5 Custom Message |
| | U.6 Set Game I.D. |
| | U.7 Factory Adjustments |
| | U.8 Factory Resets |
| | U.9 Presets |
| | U.10 Clear Credits |
| | U.11 Auto Burn-In |
| A. Adjustments Menu | |
| | A.1 Standard Adjustments |
| | A.2 Feature Adjustments |
| | A.3 Pricing Adjustments |
| | A.4 H.S.T.D. Adjustments |
| | A.5 Printer Adjustments |

Press Escape

To move out of a menu selection.

Press Enter

To get into a menu selection.

Press Up

Increases sequence; Example A.1, A.2, A.3, A.4.

Press Down

Decreases Sequence; Example A.4, A.3, A.2, A.1.

Use Up and Down to cycle through the selections in a menu.

Use Escape and Enter to move into and out of the selected menu

LAMP MATRIX

Yellow (B+) 0 Red

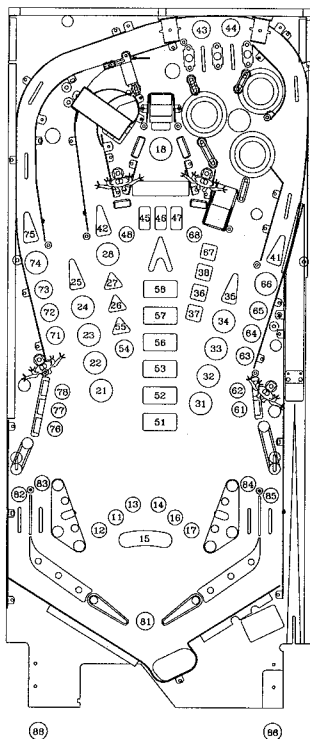
| Column \ Row | 1 Yellow-Brown J125-1 Q104 | 2 Yellow-Red J121-2 Q100 | 3 Yellow-Orange J121-3 Q95 | 4 Yellow-Black J121-4 Q99 | 5 Yellow-Green J121-5 Q94 | 6 Yellow-Blue J121-6 Q98 | 7 Yellow-Violet J121-7 Q93 | 8 Yellow-Gray J121-9 Q97 |
|--------------------------------|----------------------------------|--------------------------------|----------------------------------|---------------------------------|---------------------------------|--------------------------------|----------------------------------|--------------------------------|
| 1 Red-Brown J125-1 Q104 | SUPER JETS 11 | BIG-O-BEAM 1 21 | TRACTOR BEAM 1 31 | RIGHT LOOP ARROW 41 | ATTACK MARS 51 | MARTIAN TARGET 61 | CAPTURE 1 71 | SHOOT AGAIN 81 |
| 2 Red-Black J125-2 Q108 | SUPER JACKPOT 12 | BIG-O-BEAM 2 22 | TRACTOR BEAM 2 32 | CENTER RAMP ARROW 42 | D.C. U.S.A. 52 | MARTIAN TARGET 62 | CAPTURE 2 72 | LEFT OUTLANE 82 |
| 3 Red-Orange J125-4 Q103 | MARTIAN ATTACK MULTIBALL 13 | BIG-O-BEAM 3 23 | TRACTOR BEAM 3 33 | LEFT TOP LANE 43 | LONDON ENGLAND 53 | ATOMIC BLASTER 1 63 | CAPTURE 3 73 | LEFT RETURN 83 |
| 4 Red-Yellow J125-5 Q107 | ANNIHILATION 14 | LEFT RAMP JACKPOT 24 | RIGHT RAMP JACKPOT 34 | RIGHT TOP LANE 44 | LIGHT LOCK 54 | ATOMIC BLASTER 2 64 | LEFT LOOP JACKPOT 74 | RIGHT RETURN 84 |
| 5 Red-Green J125-6 Q102 | RETURN TO BATTLE 15 | LEFT RAMP ARROW 25 | RIGHT RAMP ARROW 35 | LEFT MOTOR BANK 45 | LOCK 1 55 | ATOMIC BLASTER 3 65 | LEFT LOOP ARROW 75 | RIGHT OUTLANE 85 |
| 6 Red-Blue J125-7 Q106 | CONQUER MARS 16 | LOCK 2 26 | MARTIAN ATTACK 36 | CENTER MOTOR BANK 46 | PISA ITALY 56 | RIGHT LOOP JACKPOT 66 | MARTIAN TARGET 76 | LAUNCH BUTTON 86 |
| 7 Red-Violet J125-8 Q101 | 5-WAY COMBO 17 | LOCK 3 27 | RULE UNIVERSE 37 | RIGHT MOTOR BANK 47 | BERLIN GERMANY 57 | EXTRA BALL 67 | MARTIAN TARGET 77 | NOT USED 87 |
| 8 Red-Gray J125-9 Q105 | DROP TARGET 18 | CENTER RAMP JACKPOT 28 | STROKE OF LUCK 38 | MARTIAN TARGET 48 | PARIS FRANCE 58 | MARTIAN TARGET 68 | MARTIAN TARGET 78 | START BUTTON 88 |

J1XX = Power Driver Board

LAMP LOCATIONS

| Item No. | Bulb No. | Lamp Assy. No. | Description | Item No. | Bulb No. | Lamp Assy. No. | Description |
|----------|----------|----------------|---------------------------|----------|----------|----------------|-------------------|
| 11 | 24-8768 | A-20622 | Super Jets | 35 | 24-8768 | A-20624 | Right Ramp Arrow |
| 12 | 24-8768 | A-20622 | Super Jackpot | 36 | 24-8768 | A-20624 | Martian Attack |
| 13 | 24-8768 | A-20622 | Martian Attack Multi-ball | 37 | 24-8768 | A-20624 | Rule Universe |
| 14 | 24-8768 | A-20622 | Annihilation | 38 | 24-8768 | A-20624 | Stroke Of Luck |
| 15 | 24-8768 | A-20622 | Return To Battle (2) | 41 | 24-6549 | A-17835 | Right Loop Arrow |
| 16 | 24-8768 | A-20622 | Conquer Mars | 42 | 24-8768 | A-20624 | Center Ramp Arrow |
| 17 | 24-8768 | A-20622 | 5-Way Combo | 43 | 24-6549 | A-17835 | Left Top Lane |
| 18 | 24-6549 | A-17807 | Drop Target | 44 | 24-6549 | A-17835 | Right Top Lane |
| 21 | 24-8768 | A-20624 | Big-O-Beam 1 | 45 | 24-8768 | A-20624 | Left Motor Bank |
| 22 | 24-8768 | A-20624 | Big-O-Beam 2 | 46 | 24-8768 | A-20624 | Center Motor Bank |
| 23 | 24-8768 | A-20624 | Big-O-Beam 3 | 47 | 24-8768 | A-20624 | Right Motor Bank |
| 24 | 24-8768 | A-20624 | Left Ramp Jackpot | 48 | 24-8768 | A-20624 | MARTIAN TARGET |
| 25 | 24-8768 | A-20624 | Left Ramp Arrow | 51 | 24-8768 | A-20624 | Attack Mars |
| 26 | 24-8768 | A-20624 | Lock 2 | 52 | 24-8768 | A-20624 | D.C., U.S.A. |
| 27 | 24-8768 | A-20624 | Lock 3 | 53 | 24-8768 | A-20624 | London, England |
| 28 | 24-8768 | A-20624 | Center Ramp Jackpot | 54 | 24-8768 | A-20624 | Light Lock |
| 31 | 24-8768 | A-20624 | Tractor Beam 1 | 55 | 24-8768 | A-20624 | Lock 1 |
| 32 | 24-8768 | A-20624 | Tractor Beam 2 | 56 | 24-8768 | A-20624 | Pisa, Italy |
| 33 | 24-8768 | A-20624 | Tractor Beam 3 | 57 | 24-8768 | A-20624 | Berlin, Germany |
| 34 | 24-8768 | A-20624 | Right Ramp Jackpot | 58 | 24-8768 | A-20624 | Paris, France |

LAMP LOCATIONS CONTINUED



| Item No. | Bulb No. | Lamp Assy. No. | Description |
|----------|----------|----------------|--------------------|
| 61 | 24-8768 | A-20624 | MARTIAN Target |
| 62 | 24-8768 | A-20624 | MARTIAN Target |
| 63 | 24-8768 | A-20624 | Atomic Blaster 1 |
| 64 | 24-8768 | A-20624 | Atomic Blaster 2 |
| 65 | 24-8768 | A-20624 | Atomic Blaster 3 |
| 66 | 24-8768 | A-20624 | Right Loop Jackpot |
| 67 | 24-8768 | A-20624 | Extra Ball |
| 68 | 24-8768 | A-20624 | MARTIAN Target |
| 71 | 24-8768 | A-20623 | Capture 1 |
| 72 | 24-8768 | A-20623 | Capture 2 |
| 73 | 24-8768 | A-20623 | Capture 3 |
| 74 | 24-8768 | A-20623 | Left Loop Jackpot |
| 75 | 24-8768 | A-20623 | Left Loop Arrow |
| 76 | 24-8768 | A-20629 | MARTIAN Target |

| Item No. | Bulb No. | Lamp Assy. No. | Description |
|----------|----------|----------------|----------------|
| 77 | 24-8768 | A-20629 | MARTIAN Target |
| 78 | 24-8768 | A-20629 | MARTIAN Target |
| 81 | 24-6549 | A-17807 | Shoot Again |
| 82 | 24-6549 | A-17835 | Left Outlane |
| 83 | 24-6549 | A-17835 | Left Return |
| 84 | 24-6549 | A-17835 | Right Return |
| 85 | 24-6549 | A-17835 | Right Outlane |
| 86 | --- | 20-9663-B-4 | Launch Button |
| 87 | --- | --- | Not Used |
| 88 | --- | 20-9663-2 | Start Button |

24-8768 = #555 Bulb

24-6549 = #44 Bulb

*Not Shown

SWITCH MATRIX

White Green

| Dedicated Grounded Switches | Column Row | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | Flipper Grounded Switches | |
|---|---------------|-------------------------------------|-------------------------------|----------------------------------|----------------------------------|---------------------------------|--------------------------------|----------------------------------|--------------------------------|---------------------------|--|
| | | Green-Brown J206-1 U20-18 | Green-Red J206-2 U20-17 | Green-Orange J206-3 U20-16 | Green-Yellow J206-4 U20-15 | Green-Black J206-5 U20-14 | Green-Blue J206-6 U20-13 | Green-Violet J206-7 U20-12 | Green-Gray J206-9 U20-11 | | |
| Orange-Brown J205-1 U17-5 Left Coin Chute D1 | 1 | White J208-1 U18-11 | LAUNCH BUTTON | SLAM TILT | TROUGH EJECT | MARTI'AN TARGET | LEFT SLINGSHOT | LEFT RAMP ENTER | RIGHT LOOP HIGH | NOT USED | Black-Green J208-13 Lower Right Flipper EOS F1 |
| Orange-Red J205-2 U17-7 Center Coin Chute D2 | 2 | White- Red J208-2 U18-9 | NOT USED | COIN DOOR CLOSED | TROUGH BALL 1 | MARTI'AN TARGET | RIGHT SLINGSHOT | CENTER RAMP ENTER | RIGHT LOOP LOW | NOT USED | Black-Violet J212-12 Lower Right Flipper Opto F2 |
| Orange-Black J205-3 U17-11 Right Coin Chute D3 | 3 | White- Orange J208-3 U18-5 | START BUTTON | NOT USED | TROUGH BALL 2 | MARTI'AN TARGET | LEFT JET | RIGHT RAMP ENTER | LEFT LOOP HIGH | NOT USED | Black-Blue J208-12 Lower Left Flipper EOS F3 |
| Orange-Yellow J205-4 U17-9 4th Coin Chute D4 | 4 | White- Yellow J208-4 U18-7 | PLUMB BOB TILT | ALWAYS CLOSED | TROUGH BALL 3 | MARTI'AN TARGET | BOTTOM JET | LEFT RAMP EXIT | LEFT LOOP LOW | NOT USED | Blue-Gray J212-11 Lower Left Flipper Opto F4 |
| Orange-Green J205-6 U16-9 Normal Function Ser Credits Esc D5 | 5 | White- Green J208-5 U19-11 | NOT USED | NOT USED | TROUGH BALL 4 | LEFT MOTOR BANK | RIGHT JET | RIGHT RAMP EXIT | LEFT SAUCER TARGET | NOT USED | Black-Violet J208-11 Upper Right Flipper EOS F5 (NOT USED) |
| Orange-Blue J205-7 U16-11 Normal Function Vol Down Down D6 | 6 | White- Blue J208-7 U19-9 | LEFT OUTLANE | LEFT RETURN | LEFT POPPER | CENTER MOTOR BANK | MARTIAN TARGET | MOTOR BANK DOWN | RIGHT SAUCER TARGET | NOT USED | Black-Yellow J212-10 Upper Right Flipper Opto F6 |
| Orange-Violet J205-8 U16-7 Normal Function Vol Up Up D7 | 7 | White- Violet J208-8 U19-5 | RIGHT RETURN | RIGHT OUTLANE | RIGHT POPPER | RIGHT MOTOR BANK | MARTIAN TARGET | MOTOR BANK UP | DROP TARGET | NOT USED | Black-Gray J208-10 Upper Left Flipper EOS F7 (NOT USED) |
| Orange-Gray J205-9 U16-5 Normal Function Begin Test Enter D8 | 8 | White- Gray J208-9 U19-7 | SHOOTER LANE | NOT USED | LEFT TOP LANE | RIGHT TOP LANE | MARTIAN TARGET | NOT USED | CENTER TROUGH | NOT USED | Black-Blue J212-9 Upper Left Flipper Opto F8 |

J2XX = CPU Board;

= Opto, Typically Closed

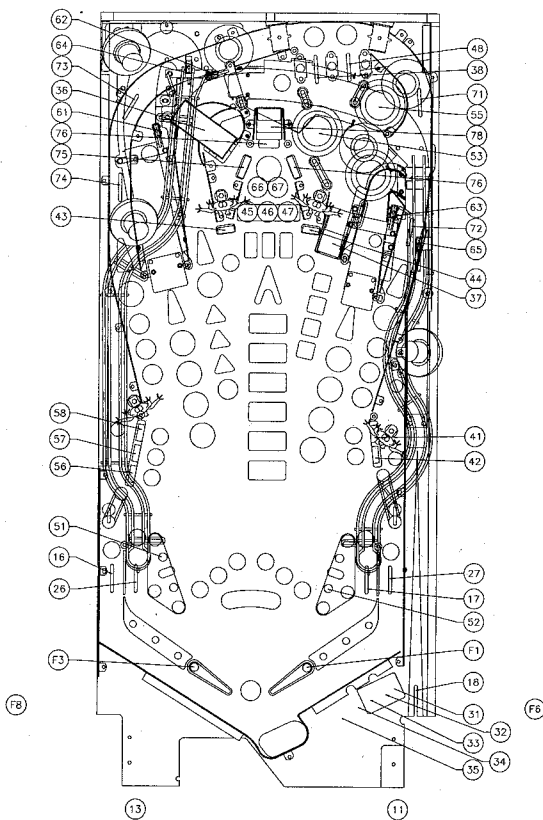
SWITCH LOCATIONS

| Item No. | Switch Part No. | Description | Item No. | Switch Part No. | Description |
|----------|-----------------|------------------------------|----------|-----------------|---------------------|
| F1 | SW-1A-194 | Lower Right Flipper EOS | 31 | A-18617-1 | Trough Eject (LED) |
| F2 | A-17316 | *Lower Right Flipper Cabinet | | A-18618-1 | (Transistor) |
| F3 | SW-1A-194 | Lower Left Flipper EOS | 32 | A-18617-1 | Trough Ball 1 (LED) |
| F4 | A-17316 | *Lower Left Flipper Cabinet | | A-18618-1 | (Transistor) |
| F5 | --- | Not Used | 33 | A-18617-1 | Trough Ball 2 (LED) |
| F6 | --- | Not Used | | A-18618-1 | (Transistor) |
| F7 | --- | Not Used | 34 | A-18617-1 | Trough Ball 3 (LED) |
| F8 | --- | Not Used | | A-18618-1 | (Transistor) |
| 11 | 20-9663-B-4 | Launch Button | 35 | A-18617-1 | Trough Ball 4 (LED) |
| 12 | --- | Not Used | | A-18618-1 | (Transistor) |
| 13 | 20-9663-2 | Start Button | 36 | A-16908 | Left Popper (LED) |
| 14 | 04-10346 | *Plumb Bob Tilt | | A-16909 | (Transistor) |
| 15 | --- | Not Used | 37 | A-16908 | Right Popper (LED) |
| 16 | 5647-12693-19 | Left Outlane | | A-16909 | (Transistor) |
| 17 | 5647-12693-19 | Right Return | 38 | 5647-12693-19 | Left Top Lane |
| 18 | 5647-12693-32 | Shooter Lane | 41 | A-18018-21 | MARTI'AN Target |
| 21 | --- | *Slam Tilt | 42 | A-18018-21 | MARTI'AN Target |
| 22 | 5643-09288-00 | *Coin Door Closed | 43 | A-18018-21 | MARTIAN Target |
| 23 | --- | Not Used | 44 | A-18018-21 | MARTI'AN Target |
| 24 | 5643-09112-00 | *Always Closed | 45 | SW-1A-201-4 | Left Motor Bank |
| 25 | --- | Not Used | 46 | SW-1A-200-4 | Center Motor Bank |
| 26 | 5647-12693-19 | Left Return | 47 | SW-1A-200-4 | Right Motor Bank |
| 27 | 5647-12693-19 | Right Outlane | 48 | 5647-12693-19 | Right Top Lane |
| 28 | --- | Not Used | | | |

*Not Shown

† Located Under Playfield

SWITCH LOCATIONS (continued)



| Item No. | Switch Part No. | Description |
|----------|-----------------|--------------------------|
| 51 | SW-1A-114 | Left Slingshot (Kicker) |
| | SW-1A-120 | (Score) |
| 52 | SW-1A-114 | Right Slingshot (Kicker) |
| | SW-1A-120 | (Score) |
| 53 | SW-11A-37-1 | Left Jet |
| 54 | SW-11A-37-1 | Bottom Jet |
| 55 | SW-11A-37-1 | Right Jet |
| 56 | A-18018-21 | "M"ARTIAN Target |
| 57 | A-18018-21 | M"A"RTIAN Target |
| 58 | A-18018-21 | MA"RTIAN Target |
| 61 | 5647-12693-11 | Left Ramp Enter |
| 62 | 5647-12693-11 | Center Ramp Enter |
| 63 | 5647-12693-11 | Right Ramp Enter |

*Not Shown

| Item No. | Switch Part No. | Description |
|----------|-----------------|---------------------|
| 64 | 5647-12693-21 | Left Ramp Exit |
| 65 | 5647-12693-13 | Right Ramp Exit |
| 66 | 5647-12693-06 | Motor Bank Down |
| 67 | 5647-12693-06 | Motor Bank Up |
| 68 | --- | Not Used |
| 71 | 5647-12693-19 | Right Loop High |
| 72 | 5647-12693-19 | Right Loop Low |
| 73 | 5647-12693-19 | Left Loop High |
| 74 | 5647-12693-19 | Left Loop Low |
| 75 | A-20784-4 | Left Saucer Target |
| 76 | A-20784-4 | Right Saucer Target |
| 77 | 5647-12693-31 | Drop Targets |
| 78 | 5647-12693-26 | Center Trough |
| 81-88 | --- | Not Used |

SOLENOID/FLASHER TABLE

| Sol. No. | Function | Solenoid Type | Voltage Connections | | | Drive Xister | Drive Connections | | | Drive Wire Color | Solenoid Part number | |
|----------|---------------------|---------------|---------------------|---------|---------|--------------|-------------------|---------|---------|------------------|----------------------|----------------|
| | | | Playfield | Backbox | Cabinet | | Playfield | Backbox | Cabinet | | Playfield | Flashlamp Type |
| 01 | AUTO PLUNGER | High Power | J133-2 | | | Q72 | J116-1 | | | Vio-Brn | AE-23-800 | |
| 02 | TROUGH EJECT | High Power | J133-2 | | | Q68 | J116-2 | | | Vio-Red | AE-26-1500 | |
| 03 | LEFT POPPER | High Power | J133-2 | | | Q71 | J116-4 | | | Vio-Org | AE-26-800 | |
| 04 | RIGHT POPPER | High Power | J133-2 | | | Q67 | J116-5 | | | Vio-Yel | AE-25-1000 | |
| 05 | LEFT ALIEN LOW | High Power | J133-2 | | | Q70 | J116-6 | | | Vio-Grn | AE-26-1500 | |
| 06 | LEFT ALIEN HIGH | High Power | J133-2 | | | Q66 | J116-7 | | | Vio-Blu | AE-26-1500 | |
| 07 | KNOCKER | High Power | | J133-2 | | Q69 | | J116-8 | | Vio-Blk | | AE-23-800 |
| 08 | RIGHT ALIEN HIGH | High Power | J133-2 | | | Q65 | J116-9 | | | Vio-Gry | AE-26-1500 | |
| 09 | LEFT SLINGSHOT | Low Power | J133-3 | | | Q44 | J113-1 | | | Brn-Blk | AE-26-1200 | |
| 10 | RIGHT SLINGSHOT | Low Power | J133-3 | | | Q48 | J113-3 | | | Brn-Red | AE-26-1200 | |
| 11 | LEFT JET | Low Power | J133-3 | | | Q43 | J113-4 | | | Brn-Org | AE-26-1200 | |
| 12 | BOTTOM JET | Low Power | J133-3 | | | Q47 | J113-5 | | | Brn-Yel | AE-26-1200 | |
| 13 | RIGHT JET | Low Power | J133-3 | | | Q42 | J113-6 | | | Brn-Grn | AE-26-1200 | |
| 14 | RIGHT ALIEN LOW | Low Power | J133-3 | | | Q46 | J113-7 | | | Brn-Blu | AE-26-1500 | |
| 15 | SAUCER SHAKE | Low Power | J133-3 | | | Q41 | J113-8 | | | Brn-Vio | AE-26-1500 | |
| 16 | DROP TARGET | Low Power | J133-3 | | | Q45 | J13-9 | | | Brn-Gry | AE-26-1200 | |
| 17 | RIGHT RAMP HIGH (2) | Flasher | J133-6 | J134-5 | | Q28 | J111-1 | J112-1 | | Blk-Brn | #906 | #906 |
| 18 | LEFT RAMP HIGH (2) | Flasher | J133-6 | J134-5 | | Q32 | J111-2 | J112-2 | | Blk-Red | #906 | #906 |
| 19 | RIGHT SIDE HIGH (2) | Flasher | J133-6 | J134-5 | | Q27 | J111-3 | J112-3 | | Blk-Org | #906 | #906 |
| 20 | RIGHT SIDE LOW | Flasher | J133-6 | | | Q31 | J111-4 | | | Blk-Yel | #89 | |
| 21 | CENTER ARROW | Flasher | J133-6 | | | Q26 | J111-5 | | | Blu-Grn | #906 | |
| 22 | JETS | Flasher | J133-6 | | | Q30 | J111-6 | | | Blu-Blk | #89 | |
| 23 | SAUCER DOME | Flasher | J133-6 | | | Q25 | J111-7 | | | Blu-Vio | #906 | |
| 24 | MOTOR BANK | Flasher | J140-2 | | | Q29 | J111-8 | | | Blu-Gry | 14-8023 | |
| 25 | LEFT RAMP LEFT (2) | Gen. Purpose | J133-6 | J134-5 | | Q16 | J109-1 | J107-1 | | Blu-Brn | #906 | #906 |
| 26 | LEFT RAMP RIGHT (2) | Gen. Purpose | J133-6 | J134-5 | | Q15 | J109-2 | J107-3 | | Blu-Red | #906 | #906 |
| 27 | LEFT SIDE HIGH (2) | Gen. Purpose | J133-6 | J134-5 | | Q14 | J109-3 | J107-4 | | Blu-Org | #906 | #906 |
| 28 | LEFT SIDE LOW | Gen. Purpose | J133-6 | | | Q13 | J109-4 | | | Blu-Yel | #89 | |
| 33 | RIGHT GATE | High Power | J119-8,7 | | | Q84 | J120-6 | | | Yel-Vio | A-14406 | |
| 34 | LEFT GATE | Low Power | J119-6,7 | | | Q86 | J120-4 | | | Org-Vio | A-14406 | |
| 35 | DIVERTER POWER | High Power | J119-8,9 | | | Q81 | J120-3 | | | Yel-Gry | A-20099 | |
| 36 | DIVERTER HOLD | Low Power | J119-8,9 | | | Q83 | J120-1 | | | Org-Gry | A-20099 | |
| 37 | L.E.D. CLOCK | Flasher | J140-2 | | | J110-1 | | | | Brn-Wht | A-20670 | |
| 38 | L.E.D. DATA | Flasher | J140-2 | | | J110-3 | | | | Vio-Wht | A-20670 | |
| 39 | STROBE LIGHT | Flasher | J140-2 | | | J110-4 | | | | Org-Wht | A-20718 | |

| General Illumination | | | | | | | | | | | | |
|----------------------|------------------|------|--------|--------|--|----|--------|---------|--|---------|-----------|------|
| 01 | BOTTOM PLAYFIELD | G.I. | J105-1 | J106-1 | | Q5 | J105-7 | J106-7 | | Wht-Brn | #44 | #555 |
| 02 | MIDDLE PLAYFIELD | G.I. | J105-2 | | | Q4 | J105-8 | | | Wht-Org | #44, #555 | |
| 03 | TOP PLAYFIELD | G.I. | J105-3 | | | Q3 | J105-9 | | | Wht-Yel | #44, #555 | |
| 04 | **TOP INSERT | G.I. | | J106-5 | | Q2 | | J106-10 | | Wht-Grn | | #555 |
| 05 | **BOTTOM INSERT | G.I. | | J106-6 | | Q1 | | J106-11 | | Wht-Vio | | #555 |

| Flipper Circuits | | | | | | | | | | | | | |
|------------------|---------------------|--------------|-------------|---------------------|-------|-------------------|------|------------------|---------|-------------------|----------|---------------|------------|
| Item No. | Coil/ Flasher No. | Assy. Number | Description | Voltage Connections | | Drive Transistors | | Drive Connectors | | Drive Wire Colors | | Coil Part No. | Coil Color |
| | | | | Playfield | Power | Power | Hold | Playfield | Power | Power | Hold | | |
| 29 | | | | J119-1 (Red-Gm) | Q90 | | | J120-13 | Yel-Gm | | | | |
| 30 | Lower Right Flipper | | | J119-1 (Red-Gm) | Q92 | | | J120-11 | Org-Grn | | FL-11629 | BLUE | |
| 31 | | | | J119-4 (Red-Blu) | Q87 | | | J120-9 | Yel-Blu | | | | |
| 32 | Lower Left Flipper | | | J119-4 (Red-Blu) | Q89 | | | J120-7 | Org-Blu | | FL-11629 | BLUE | |
| 33 | | | | J119-6 (Red-Vio) | Q84 | | | J120-6 | Yel-Vio | | SEE | ABOVE | |
| 34 | Upper Right Flipper | | | J119-6 (Red-Vio) | Q86 | | | J120-4 | Org-Vio | | SEE | ABOVE | |
| 35 | | | | J119-8 (Red-Gry) | Q81 | | | J120-3 | Yel-Gry | | SEE | ABOVE | |
| 36 | Upper Left Flipper | | | J119-8 (Red-Gry) | Q83 | | | J120-1 | Org-Gry | | SEE | ABOVE | |

J1xx=Power Driver Board; 24-6549=#44 bulb; 24-8704=#89 bulb; 24-8768=#555 bulb; 24-8802=#906 bulb.

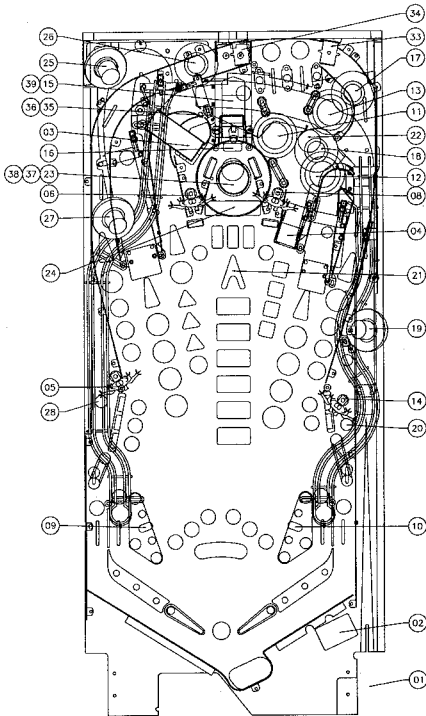
**These G.I. strings do not brighten and dim, they are always ON.

SOLENOID/FLASHER LOCATIONS

| Item No. | Coil/ Flasher No. | Assy. Number | Description | Item No. | Coil/ Flasher No. | Assy. Number | Description |
|----------|-------------------|--------------|------------------|----------|-------------------|--------------|-----------------|
| 01 | AE-23-800 | A-14525 | Auto Plunger | 09 | AE-26-1200 | B-9362-L-2 | Left Slingshot |
| 02 | AE-26-1500 | A-19963-1 | Trough Eject | 10 | AE-26-1200 | B-9362-R-3 | Right Slingshot |
| 03 | AE-26-800 | A-20633 | Left Popper | 11 | AE-26-1200 | A-9415-2 | Left Jet |
| 04 | AE-25-1000 | A-20573 | Right Popper | 12 | AE-26-1200 | A-9415-2 | Bottom Jet |
| 05 | AE-26-1500 | A-20579-1 | Left Alien Low | 13 | AE-26-1200 | A-9415-2 | Right Jet |
| 06 | AE-26-1500 | A-20579-2 | Left Alien High | 14 | AE-26-1500 | A-20579-1 | Right Alien Low |
| 07 | AE-23-800 | B-10686-1 | Knocker | 15 | AE-26-1500 | A-20608 | Saucer Shake |
| 08 | AE-26-1500 | A-20579-1 | Right Alien High | 16 | AE-26-1200 | A-20657 | Drop target |

*NOT SHOWN

Solenoid/Flasher Locations (continued)



| Item No. | Coil/Flasher No. | Assy. Number. | Description |
|----------|------------------|---------------|---------------------|
| 17 | 24-8802 | A-20621 | Right Ramp High (2) |
| 18 | 24-8802 | A-20621 | Right Ramp Low (2) |
| 19 | 24-8802 | A-20549 | Right Side High (2) |
| 20 | 24-8704 | A-17983 | Right Side Low |
| 21 | 24-8802 | A-20624 | Center Arrow |
| 22 | 24-8704 | A-17803 | Jets |
| 23 | 24-8802 | A-20670 | Saucer Dome |
| 24 | 14-8023 | A-20572 | Motor Bank |
| 25 | 24-8802 | A-20553 | Left Ramp Left |
| 26 | 24-8802 | A-20553 | Left Ramp Right |
| 27 | 24-8802 | A-20546 | Left Side High |
| 28 | 24-8704 | A-17983 | Left Side Low |
| 33 | A-14406 | A-17796 | Right Gate |
| 34 | A-14406 | A-17796 | Left Gate |
| 35 | A-20099 | A-17241 | Diverter Power |
| 36 | A-20099 | A-17241 | Diverter Hold |
| 37 | --- | A-20670 | L.E.D. Clock |
| 38 | --- | A-20670 | L.E.D. Data |
| 39 | --- | A-20718 | Strobe Light |

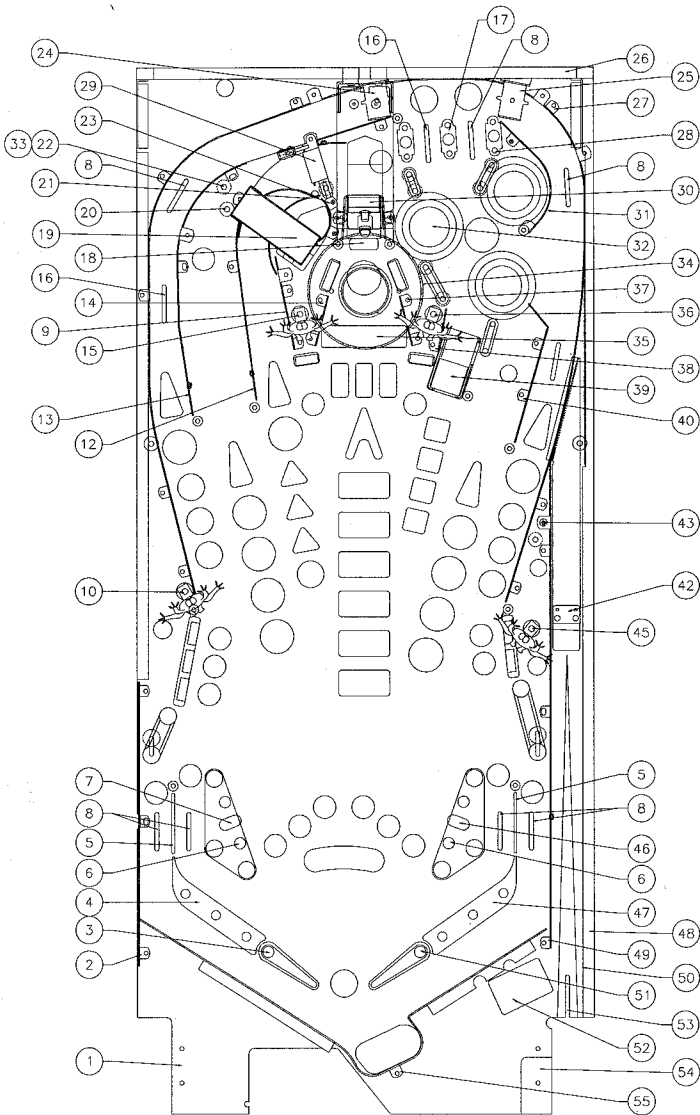
General Illumination Circuits

| Item No. | Description | Bulb No. | |
|----------|------------------|-----------|---------------|
| 01 | Bottom Playfield | #44, #555 | G.I. String 1 |
| 02 | Middle Playfield | #44, #555 | G.I. String 2 |
| 03 | Top Playfield | #44, #555 | G.I. String 3 |
| 04 | Top Insert | #555 | G.I. String 4 |
| 05 | Bottom Insert | #555 | G.I. String 5 |

Flipper Coils

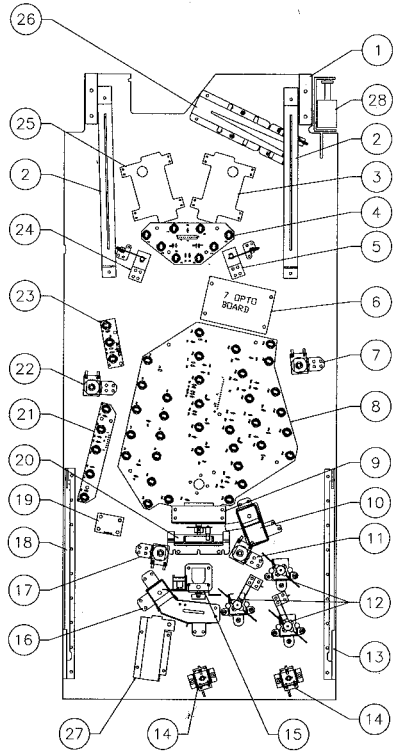
| Item No. | Coil No. | Color | Assy. No. | Description |
|----------|----------|-------|-------------|---------------|
| 29 & 30 | FL-11629 | Blue | A-15849-R-2 | Lwr R Flipper |
| 31 & 32 | FL-11629 | Blue | A-15849-L-2 | Lwr L Flipper |

UPPER PLAYFIELD PARTS



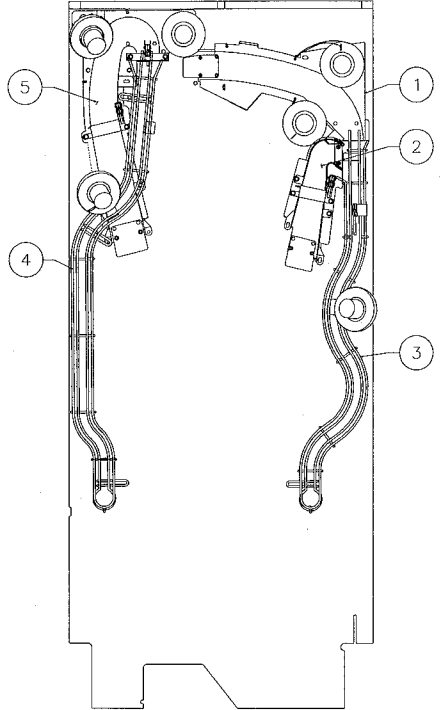
LOWER PLAYFIELD PARTS

| Item | Part Number | Description |
|------|-------------|-------------------------------|
| 1 | 01-9211 | Bracket Playfield Hanger (2) |
| 2 | 01-11781 | Leg Support (2) |
| 3 | A-15849-R | Flipper Assembly |
| 4 | A-20622 | 8-Lamp Board Assembly |
| 5 | A-17811 | Kicker Arm (Slingshot) Assy. |
| 6 | B-9362-R-3 | Coil & Bracket Assembly |
| 7 | A-15576 | 7-Switch Opto PCB Assembly |
| 8 | A-20579-1 | Alien Mech. Assembly |
| 9 | 01-14171.2 | Figurine Support Bracket |
| 10 | A-20624 | 37-Lamp PCB Assembly |
| 11 | A-20572 | 3-Bank Motor Assembly |
| 12 | A-20573 | Right Ball Popper Assembly |
| 13 | A-20579-1 | Alien Mech. Assembly |
| 14 | 01-14173.1 | Figurine Support Bracket |
| 15 | A-9415-2 | Jet Bumper Coil Assembly |
| 16 | A-17749-1-2 | Playfield Slide Mechanism, R. |
| 17 | A-17796 | Ball Gate Actuator Assy. (2) |
| 18 | A-20657 | 1-Bank Drop Target Assembly |
| 19 | A-20633 | Left Popper Assembly |
| 20 | 04-10296 | Left Popper Scoop |
| 21 | A-20479-2 | Alien Mech. Assembly |
| 22 | 01-14170.1 | Figurine Support Bracket |
| 23 | A-17749-1-1 | Playfield Slide Mechanism, L. |
| 24 | A-15340 | Motor EMI w/Brake PCB Assy. |
| 25 | A-20683 | 3-Bank Moving Target Assy. |
| 26 | A-20623 | 5-Lamp PCB Assembly |
| 27 | A-20579-1 | Alien Mech. Assembly |
| 28 | 01-14169.2 | Figurine Support Bracket |
| 29 | A-20629 | 3-Lamp PCB Assembly |
| 30 | A-17811 | Kicker Arm (Slingshot) Assy. |
| 31 | B-9362-L-2 | Coil & Bracket Assembly |
| 32 | A-15849-L-2 | Flipper Assembly |
| 33 | A-19963-1 | Ball Trough Assembly |
| 34 | A-17241 | Ramp Diverter Assembly |
| 35 | A-14525 | Kicker Bracket Assembly |

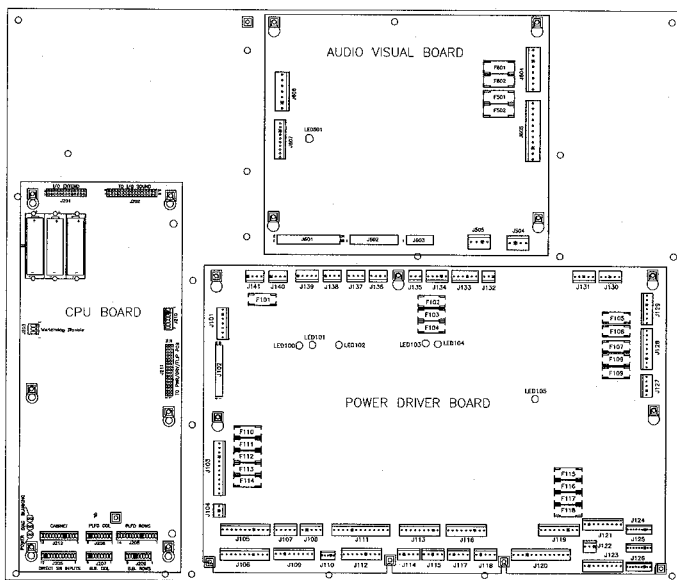


RAMPS

| Item | Part Number | Description |
|------|-------------|-----------------------------|
| 1 | A-20621 | Middle Ramp Assembly |
| 2 | A-20547 | Right Plastic Ramp Assembly |
| 3 | A-20549 | Right Wire Ramp Assembly |
| 4 | A-20546 | Left Wire Ramp Assembly |
| 5 | A-20553 | Left Plastic Ramp Assembly |



FUSE LIST



AUDIO VIDEO BOARD

| | | |
|------|---------------|--------------|
| F501 | -25V | T2.5A, 250V |
| F502 | +25V | T2.5A, 250V |
| F601 | +62V | T0.25A, 250V |
| F602 | -113V & -125V | T0.25A, 250V |

CPU BOARD

There are no fuses on the CPU board.

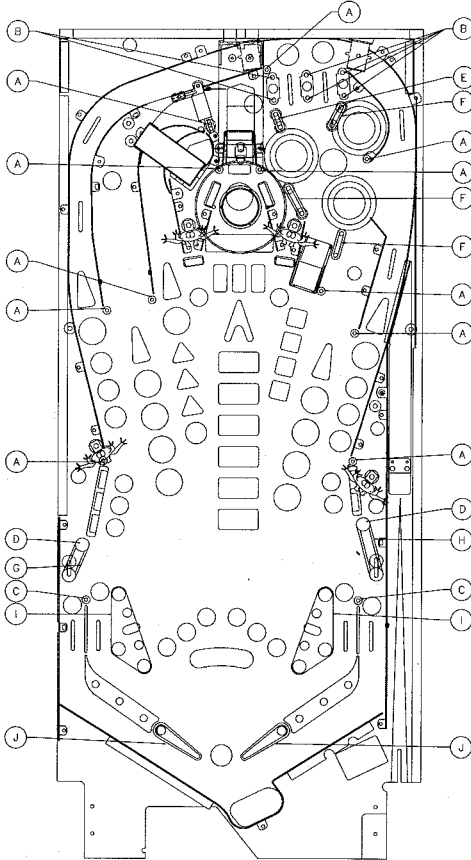
POWER DRIVER BOARD

| | | | | | |
|------|----------------------|--------------|------|----------------------|-------------|
| F101 | Regulated 12V | T0.63A, 250V | F110 | G.I. #5 White-Violet | T4.0A, 250V |
| F102 | Solenoids #9 to #16 | T4.0A, 250V | F111 | G.I. #4 White-Green | T4.0A, 250V |
| F103 | Solenoids #1-#8 | T4.0A, 250V | F112 | G.I. #3 White-Yellow | T4.0A, 250V |
| F104 | Solenoids #25 to #28 | T4.0A, 250V | F113 | G.I. #2 White-Orange | T4.0A, 250V |
| F105 | +5V Logic | T4.0A, 250V | F114 | G.I. #1 White-Brown | T4.0A, 250V |
| F106 | +18V Lamp Matrix | T5.0A, 250V | F115 | +50V Flippers | T4.0A, 250V |
| F107 | Flasher Secondary | T4.0A, 250V | F116 | +50V Flippers | T4.0A, 250V |
| F108 | Solenoid Secondary | T6.3A, 250V | F117 | +50V Flippers | T4.0A, 250V |
| F109 | Unregulated 12V | T4.0A, 250V | F118 | +50V Flippers | T4.0A, 250V |

LINE FILTER

| | |
|----------|-------------|
| Foreign | T4.0A, 250V |
| Domestic | T5.0A, 250V |

RUBBER RINGS



| Item No. | Part Number | Description. | Qty | Item No. | Part Number | Description. | Qty |
|----------|-------------|----------------------|-----|----------|-------------|---------------------|-----|
| A | 23-6556 | Black Sleeve | 11 | F | 23-6694-5 | Ring 3/4", Black | 3 |
| B | 23-6641 | Bumper Rubber, Black | 6 | G | 23-6694-6 | Ring 1", Black | 1 |
| C | 23-6694-1 | Grommet 3/32", Black | 2 | H | 23-6694-7 | Ring 1 1/4", Black | 1 |
| D | 23-6694-3 | Ring 5/16", Black | 2 | I | 23-6694-10 | Ring 2 1/2", Black | 2 |
| E | 23-6694-4 | Ring 7/16", Black | 1 | J | 23-6695 | Flipper Ring, Black | 2 |

WARNINGS & NOTICES

WARNING

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FOR SERVICE...
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