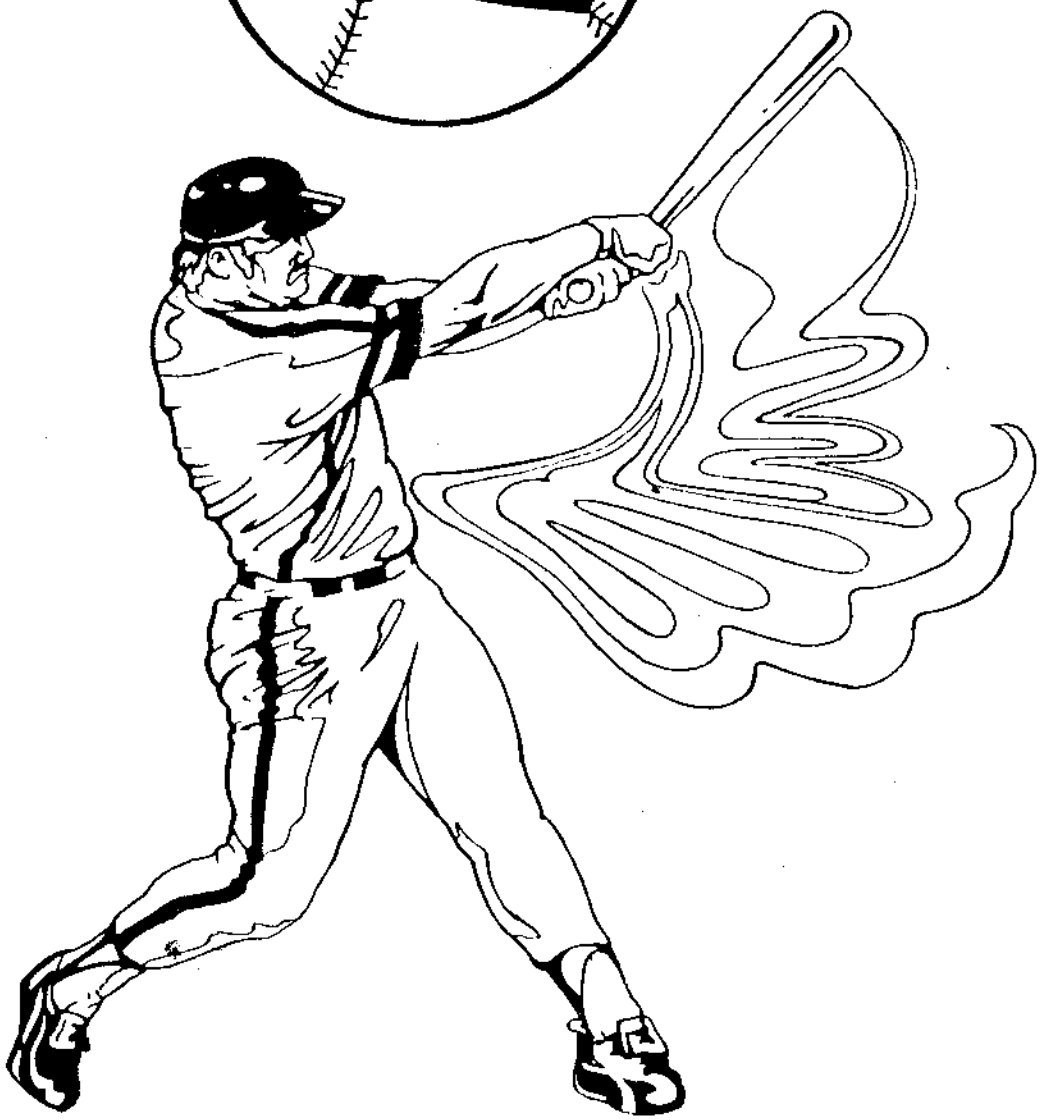
GAME 1311
FO 770

# GRAND SLAM



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# Installation and General Game Operation Instructions

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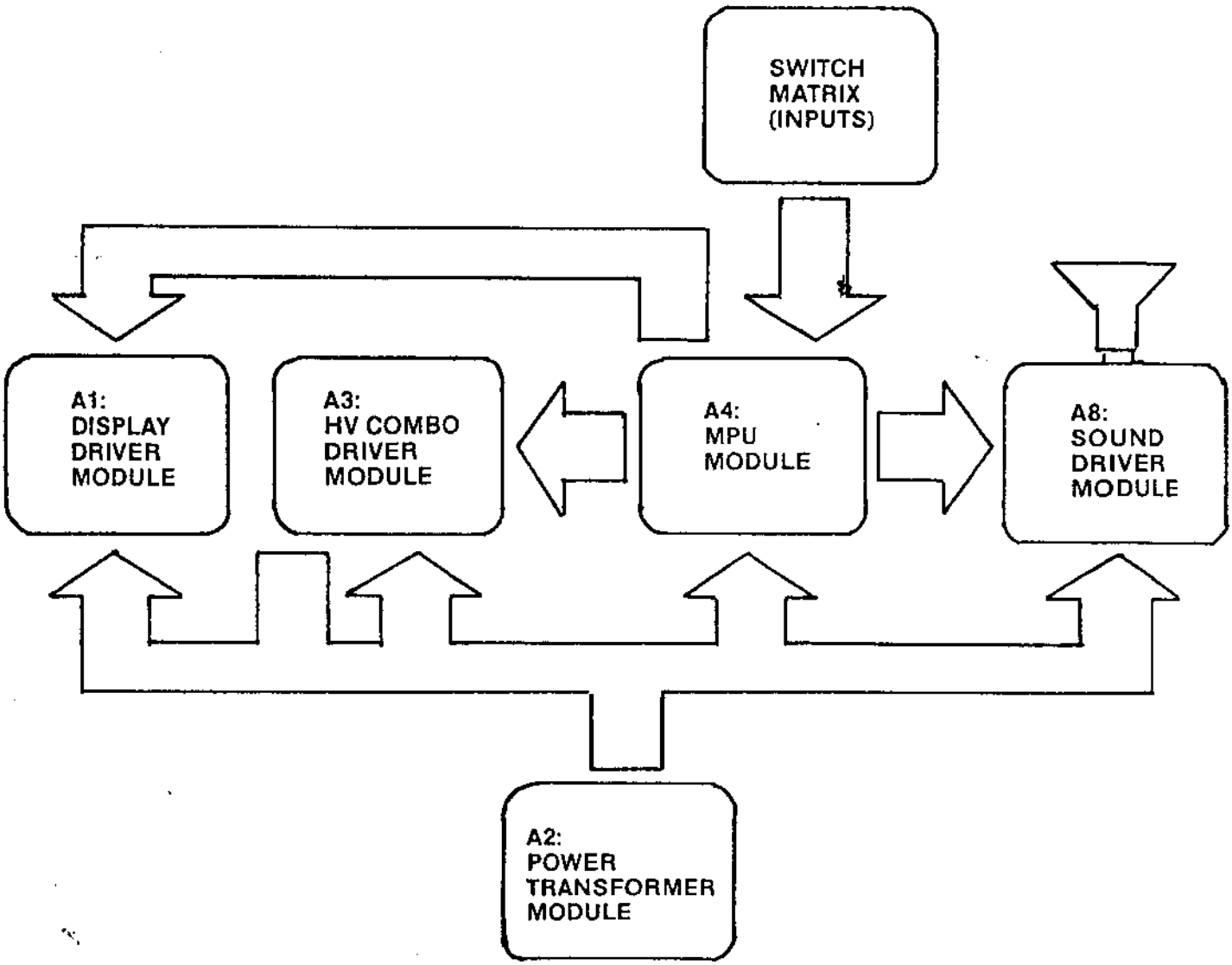
# BLOCK DIAGRAM—ELECTRONIC PINBALL GAME



# I. INSTALLATION

**Assemble the game as follows:**

Bolt legs to cabinet. Bolt back box to cabinet. Use flat washers under bolt heads. Gently feed cable connectors and ground braid through cable port in back box. Screw ground braid to braid in back box. Carefully and fully insert connectors on printed circuit assemblies.

On all games there are certain items that should be checked after shipment. These are visual inspections which may avoid time consuming service work later. Minor troubles caused by abusive handling in shipment are unavoidable. Cable connectors may be loosened, switches (especially tilt switches) may go out of adjustment. Plumb bob tilt switch should always be adjusted after game is set on location and leg levelers are adjusted.

Visual inspections before plugging in line cord:

1. Check that all cable connectors are completely seated on printed circuit assemblies.
2. Check that cables are clear of all moving parts.
3. Check for any wires that may have become disconnected.
4. Check switches for loose solder or other foreign material that may have come loose in shipment and could cause shorting of contacts.
5. Check wires on coils for proper soldering. Cold solder connections may not show up in factory inspection, but vibration in shipment may break contact.
6. Check that fuses are firmly seated and making good contact.
7. Check the transformer for any foreign material shorting across wiring lugs.
8. Check wiring of transformer to correspond to location voltage. See figure 1.

Check adjustment of the three (normally open) tilt switches:

1. Panel tilt on bottom of playfield panel.
2. Plumb bob tilt on left side of cabinet near front door.
3. Ball tilt above plumb bob tilt. Insert the smaller ball (15/16" dia.) into the ball tilt assembly, and adjust the bracket so the ball will roll free to contact the switch blade, if front of cabinet is

**TRANSFORMER CONNECTION INSTRUCTIONS**

**REFER TO POWER SUPPLY SCHEMATIC IN GAME MANUAL FOR TABLE "A"**

| |
|---|
| 115 VAC, 2-8, 3-6, 7-10 |
| 120 VAC, 2-8, 4-6, 7-11 |
| 220 VAC, 4-8, 7-9 |
| 240 VAC, 4-8, 7-11 |

PART OF POWER--TRANSFORMER MODULE A2, LOCATED IN LOWER CABINET

# II. GENERAL GAME OPERATION

**Place ball into playfield by outhole.**

**Coin game.** Coin should be rejected. Plug in line cord. Move power ON-OFF master switch at bottom right front corner of cabinet to 'ON' position. The game will play a power-up tune to announce game-readiness. Drop targets are reset, scores are set to zero, alternating with the 'High Score to Date', and the game is ready for play. Coin game. The game should accept the coin and post credits* for coins accepted (adjustable). Pressing the credit button on the door will cause the outhole kicker to serve the ball to the shooter alley. The 1st player-up lite is lit. A game-up tune* is played to announce play-readiness.

One player is posted each additional time the credit button is pressed (one to four can play). The credits are reduced by one each time the credit button is pressed until the credits are reduced to zero.

Shooting the ball initiates play.

The game awards all points earned by the player. If spinner is turning and scoring when the ball hits a target, the spinner and the target scores are awarded.

Extra balls won during the course of the game are added immediately to the player's regular balls.

When the ball enters the outhole, the bonus score is added to the total score. The outhole kicker serves the ball to the shooter alley and play is resumed. The next player up is lit up and the ball to play is shown until a score is made, at which time the ball to play steps down 1 ball for that player. This continues until each player has played the allowable number of balls per game (adjustable). At this time the 'Game Over' light is lit. A random match* number appears and the 'Match' light is lit. If the number is the same as the last two digits in a player's score, a free game is awarded.

Scoring over 1,999,990 gives "High Score to Date" award.

At the end of the game, a 'High Score to Date' is alternately flashed with 4 player scores. If the 'High Score to Date' is beat, this feature* awards free games.

Tilting the game results in loss of a ball. The flippers, thumper-bumpers, etc., go 'dead'. Bonus points are not scored. The purpose of the tilt penalty is to discourage the player from jostling the machine in an attempt to prolong play. Game action becomes normal after the ball kicker assembly serves the ball to the shooter alley.

Slamming the machine results in loss of the game. All feature lights go out, the game goes 'dead', and a time delay occurs. The purpose of the time delay is to discourage unnecessary abuse of the machine. After the delay, the 'Game Over' light lites and the power-up tune is played. The time delay occurs anytime one of the slam switches is made to contact. There are two factory installed slam switches, on the front door, and one on left side of cabinet. (Any number of slam switches could be installed by the operator, to meet his individual requirement.) The switch should be adjusted to have approximately 1/16" gap between the contacts. The weighted blade should be adjusted to attain the desired sensitivity. Decreasing the gap between contacts will make the switch more sensitive. Opening the gap will reduce sensitivity.

*Some tunes and features can be disabled by operator if so desired. See Back Box Adjustments.
**NOTE:** Scoring and feature units will differ from game to game.

## III. BOOKKEEPING FUNCTIONS

The game is designed to help the operator perform certain accounting functions. The game can display the number of total plays and replays (free games). It can display the number of coins dropped down each coin chute. The bookkeeping functions are displayed on all player score displays simultaneously. An identification number, 05 to 15, appears on the Match/Ball in Play window as follows:

05— 00 to— 40 = Current Credits
*06—100000 to—99999 = Total Plays (Payed & Free Games)
*07— 10000 to—99999 = Total Replays (Free Games)
08— 00 to—99999 = Game Percentage
09— 00 to—99999 = Total times 'High Score to Date' is beat
*10— 10000 to—99999 = Coins Dropped thru Coin Chute #1
*11— 10000 to—99999 = Coins Dropped thru Coin Chute #2**
*12— 10000 to—99999 = Coins Dropped thru Coin Chute #3**
*13— 00 to—99999 = Number of Specials awarded from Panel Specials Only
*14— 00 to—99999 = Number of minutes of Game Play
*15— 00 to—99999 = Number of Service Credits

The game displays the first bookkeeping entry if the Self-Test button (See Fig. III) on the inside of the front door is pressed ten times. Alternately push and release the Self-Test button at one second intervals. The number 05 appears in the 'Match/Ball in Play' window. Current credits appear on the player score displays. Each additional press of the button causes the next entry to be displayed.

After the data in each bookkeeping register is recorded, it can be set to zero simply by pressing switch button S33, located on A4, the MPU module in the back box (See Fig. III), or by pressing the Coin Chute #3 switch. Any or all registers can be cleared by alternating between the Self-Test button and the switch button S33 on the MPU module or Coin Chute #3 switch. The operator is given this option as a possible convenience and can elect to use or not use it as his needs direct.

Pressing the button 5 more times causes the game to play the power-up tune and light the Game Over light.

Service credits are designed to allow the serviceman to test the game under actual play conditions without disturbing the bookkeeping records that reside at identification numbers 06, 07, 10, 11 and 12.

To obtain Service Credits, push and release the Self-Test switch until identification number 05 appears in the 'Match/Ball in Play' window. Hold in the Credit button until the desired number of Service Credits (up to five) appears on the player score displays.

NOTE: If, upon accessing identification number 05, a number of credits greater than five is displayed, pressing the credit button has no effect.

Identification number 15 is reserved as a record of the number of Service Credits used.

*The 10,000 level is pre-set at the factory; can be set to zero, initially, if desired.

**If Coin Chute is not used in game, number displayed (if other than 00) on Player Score displays has no significance.

**NOTE:** If "Total Play" register is reset to zeroes then "Total Replays" register should also be reset to zeroes to maintain the game percentage value.

# GRAND SLAM #1311

## Feature Operations & Scoring

### H-O-M-E-R FLY-AWAY TARGETS FEATURE:

Each target scores 3000 points if hit in sequence, 1000 points if hit out of sequence. All target lites flash when reset.

1) OUT-OF-SEQUENCE: The lites stop flashing. When all of the targets are latched, a Home Run is scored on the center base path feature and registered on the total runs readout. (A Home Run will score any runner ahead of it).
2) IN-SEQUENCE: The lites remain flashing. When all of the targets are latched a Grand Slam Homer is scored on the center base path feature and registered on the total runs readout (all of the bases become filled and 4 runs are scored). Also 5000 points or the lit HOMER SEQUENCE VALUE is scored and advanced to the next value.

F.D.S #7 controls the initial HOMER SEQUENCE VALUE
ON: start of 25K OFF: start at 5K

F.D.S. #16 recalls the HOMER SEQUENCE VALUE
ON: In memory OFF: Reset ball-to-ball

F.D.S. #14 controls the number of *Specials* on the HOMER SEQUENCE VALUE
ON: Unlimited number of *Specials* (50K-SPL-50K-SPL-ETC).
OFF: Only 1 *Special* per game (reverts back to 50K).

F.D.S. #15 controls the number of EXTRA BALLS on the HOMER SEQUENCE VALUE
ON: Unlimited number of EXTRA BALLS possible. OFF: Only 1 EXTRA BALL per game.

### TOP "GRAND SLAM HOMER" LANES

Each lane scores 3000 points & lites its respective lane lite. When all 3 lanes are lit, a Grand Slam Homer is scored on the center base path feature and registered on the total runs readout (all of the bases become filled regardless of bases previously empty and 4 runs are scored).

The right flipper cabinet button operates the lane change feature. The Grand Slam Homer lane lites are in memory.

### TOP SAUCER "H-O-M-E-R" FEATURE:

The game starts with the "H" lit. The saucer scores 2000 points for each lit letter and advances one letter. When the last lite is lit (strobing) a Home Run is scored on the center base path feature and registered on the total runs readout. (A Home Run also scores any runner on a base ahead of it.)

The top saucer "H-O-M-E-R" lites are in memory.

### "SINGLE" SCORING GATE & "DOUBLE" ROLLOVER LANE FEATURES:

The "Single" scoring gate and "Double" roll-over lane score 1000 points each. When lit, each feature advances a runner to its proper base: (1st base for a single, 2nd base for a double).

A single or double will advance any runner on a base ahead of it.

F.D.S. #6 controls the "SINGLE" & "DOUBLE" lites.
ON: both lites always ON OFF: lites alternate

### "T-R-I-P-L-E" TARGETS FEATURE:

The game starts with the "T" lit. Each target scores 1000 points when lit or 100 points if not lit. When "T-R-I-P-L-E" is completed, a triple is scored on the center base path feature. (A triple will score any runner on base ahead of it).

The "T-R-I-P-L-E" lites must be hit in sequence and are in memory.

### "S-T-E-A-L" TARGETS & LANES FEATURE:

Each target or lane scores 5000 points when lit or 500 points when not lit.

Making "S-T-E-A-L" 1st time = Awards Bonus Multiplier 2X
Making "S-T-E-A-L" 2nd time = Awards Bonus Multiplier 3X
Making "S-T-E-A-L" 3rd time and each additional time = 50X

2X and 3X Bonus Multiplier apply to player's runs collected in the outhole.

"S-T-E-A-L" lites and multipliers and 50K are not in memory.

F.D.S. #24 controls the "S" and "L" lanes
ON: lanes tied together OFF: Not tied together

### ADVANCE RUNNER SPINNER FEATURE:

The Spinner scores 100 points. Every 3 consecutive spins, the farthest runner on base advances one base path lite.

If a runner does not reach his next base within one second of the last spinner revolution, he returns back to his previous base.

### CENTER BASE PATH FEATURE:

All bases roll-over buttons score 1000 points. Bases flash to show a runner.

### THUMPER BUMPERS:

Each thumper bumper scores 100 points.

### REBOUNDS (3):

Each rebound switch scores 10 points.

## RUNS TO BEAT & CENTER TOTAL RUNS READOUT FEATURE:

Each time a runner reaches home plate, one run is registered on the total runs readout on the backglass. The left two digits register the 1st player's total runs and the right two digits register the 2nd player's total runs. The center two digits display the RUNS-TO-BEAT threshold. Beating this threshold awards a SPECIAL.

F.D.S. #30 controls the points per run collected in the outhole.

ON: 10,000 points per run OFF: 5,000 points per run

F.D.S. #8 advances the RUNS-TO-BEAT threshold

ON: advances by 10 runs when threshold is beat –allows multiple *SPECIALS* per game.

OFF: does not advance—only permits one *SPECIAL* per game.

F.D.S. #21, #22, #23 control the Runs-To-Beat Threshold.

### RUNS-TO-BEAT THRESHOLD

| RUNS | #21 | #22 | #23 |
|---|---|---|---|
| 20 | ON | ON | ON |
| 25 | OFF | ON | ON |
| 30 | ON | OFF | ON |
| 35 | OFF | OFF | ON |
| 40 | ON | ON | OFF |
| 45 | OFF | ON | OFF |
| 50 | ON | OFF | OFF |
| 55 | OFF | OFF | OFF |

### SPECIAL REPLAY/X-BALL/NOVELTY MODES

Self test positions 16 and 17 give the operator flexibility to award a replay ball or score (Novelty) when a special is scored. A combination of X-Ball, Novelty can be obtained through the following chart.

| Self test position 16 | Set to "03" AWARD | Set to "02" AWARD | Set to "01" AWARD |
|---|---|---|---|
| Playfield X-Balls and Specials | | | |
| Runs to Beat Special | REPLAY | X-BALL* | 50,000 |
| Flyaway Special | REPLAY | X-BALL* | 50,000 |
| Flyaway X-Ball | X-BALL | X-BALL** | 25,000 |
| Self Test Position 17 | Set to "03" AWARD | Set to "02" AWARD | Set to "01" AWARD |
| Scoring Thresholds | REPLAY | X-BALL** | 25,000 |

(*) 50,000 if same player shoot again is lit.
(**) 25,000 if same player shoot again is lit.

### BACK BOX GAME ADJUSTMENTS:

Each game has thirty-two switches located on the MPU module, located in the backbox, that allows play to be customized to the location. (See Fig. 3). Credits per coin, maximum credits, credit display, balls (3 or 5) per game, match feature, high game feature, special award, are selectable by means of switches. The switches are contained in four-sixteen lead packages numbered S1-8, S9-16, S17-24, and S25-32 for easy identification. The "On" position is marked on the assembly. TURN OFF POWER BEFORE MAKING ADJUSTMENTS. MAKE ADJUSTMENTS BEFORE TURNING POWER BACK ON.

**GRAND SLAM SWITCH ASSIGNMENT**

32, 31 — BALLS PER GAME—SEE PAGE 6
30 — OUTHOLE BONUS SCORE—SEE PAGE 7
29 — NUMBER OF SPECIALS PER GAME—SEE PAGE 7
28 — MATCH FEATURE—SEE PAGE 6
27 — CREDIT DISPLAY—SEE PAGE 6
26, 25 — MAXIMUM CREDITS—SEE PAGE 5
24 — S AND L RETURN LANE LITES—SEE PAGE 7
23, 22, 21 — RUNS TO BEAT—SEE PAGE 7
20, 19, 18, 17 — COIN CHUTE #3—SEE PAGE 5
16 — FLYAWAY VALUE LITES—SEE PAGE 7
15 — EXTRA BALLS PER GAME—SEE PAGE 7
14 — FLYAWAY SPECIAL LITE—SEE PAGE 7
13, 12, 11, 10, 9 — COIN CHUTE #2—SEE PAGE 5
8 — RUNS TO BEAT ADVANCES—SEE PAGE 7
7 — FLYAWAY 25K LITE—SEE PAGE 7
6 — SINGLE AND DOUBLE LITE—SEE PAGE 7
5, 4, 3, 2, 1 — COIN CHUTE #1—SEE PAGE 5

# V. GAME ADJUSTMENTS

### A. Playfield Panel Post Adjustments:

Posts that control left and right outlane opening on panel can be removed to make access to outlanes easier or harder for ball to enter. See Figure II.

Easier entry will decrease playing time and scoring (conservative).
Harder entry will increase playing time and scoring (liberal).

### B. Back Box Game Adjustments:

Each game has thirty-two switches located on A4, the MPU module, located in the back box, that allow play to be customized to the location. See Figure III. Credits per coin, maximum credits, credit display, balls per game, match feature, high game feature, special award and melody are selectable by means of the switches. The switches are contained in four-sixteen lead packages numbered S1-8, S9-16, S17-24, and S25-32 for easy identification. The "ON" toggle position is marked on the assembly. **Turn off power before making adjustments.**

### Credits/Coin Adjustments:

The credits per coin are selectable by means of S17-S20 for coin chute #2 (Center). The switch settings and resultant credits/coin are as follows:

| S20 | S19 | S18 | S17 | Credits/Coin |
|---|---|---|---|---|
| OFF | OFF | OFF | OFF | Same as Coin Chute #1 Settings |
| OFF | OFF | OFF | ON | 1/1 Coin |
| OFF | OFF | ON | OFF | 2/1 Coin |
| OFF | OFF | ON | ON | 3/1 Coin |
| OFF | ON | OFF | OFF | 4/1 Coin |
| OFF | ON | OFF | ON | 5/1 Coin |
| OFF | ON | ON | OFF | 6/1 Coin |
| OFF | ON | ON | ON | 7/1 Coin |

| S20 | S19 | S18 | S17 | Credits/Coin |
|---|---|---|---|---|
| ON | OFF | OFF | OFF | 8/1 Coin |
| ON | OFF | OFF | ON | 9/1 Coin |
| ON | OFF | ON | OFF | 10/1 Coin |
| ON | OFF | ON | ON | 11/1 Coin |
| ON | ON | OFF | OFF | 12/1 Coin |
| ON | ON | OFF | ON | 13/1 Coin |
| ON | ON | ON | OFF | 14/1 Coin |
| ON | ON | ON | ON | 15/1 Coin |

The credits given are selectable by means of switches 1-5 incl., for coin chute #1 and switches 9-13 incl., for coin chute #3. Thirty-one different credit ratios are available for each coin chute. The switch settings and resultant credits/coin are listed below.

### CREDITS/COIN ADJUSTMENTS

| IN CHUTE | SWITCHES | | | | | CREDITS | CREDITS | CREDITS | CREDITS | CREDITS | TOTAL CREDITS/COINS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| (HINGE SIDE) | 5 | 4 | 3 | 2 | 1 | | | | | | |
| #3 | 13 | 12 | 11 | 10 | 9 | | | | | | |
| RIGHT SIDE) | OFF | OFF | OFF | OFF | OFF | 1/1 Coin | | | | | |
| | OFF | OFF | OFF | OFF | ON | 2/1 Coin | | | | | |
| | OFF | OFF | OFF | ON | OFF | 3/1 Coin | | | | | |
| | OFF | OFF | OFF | ON | ON | 4/1 Coin | | | | | |
| | OFF | OFF | ON | OFF | OFF | 5/1 Coin | | | | | |
| | OFF | OFF | ON | OFF | ON | 6/1 Coin | | | | | |
| | OFF | OFF | ON | ON | OFF | 7/1 Coin | | | | | |
| | OFF | OFF | ON | ON | ON | 8/1 Coin | | | | | |
| | OFF | ON | OFF | OFF | OFF | 9/1 Coin | | | | | |
| | OFF | ON | OFF | OFF | ON | 12/1 Coin | | | | | |
| | OFF | ON | OFF | ON | OFF | 14/1 Coin | | | | | |
| | OFF | ON | OFF | ON | ON | 1/2 Coins* | | | | | |
| | OFF | ON | ON | OFF | OFF | 2/2 Coins* | | | | | |
| | OFF | ON | ON | OFF | ON | 3/2 Coins* | | | | | |
| | OFF | ON | ON | ON | OFF | 4/2 Coins* | | | | | |
| | OFF | ON | ON | ON | ON | 5/2 Coins* | | | | | |
| | ON | OFF | OFF | OFF | OFF | 6/2 Coins* | | | | | |
| | ON | OFF | OFF | OFF | ON | 7/2 Coins* | | | | | |
| | ON | OFF | OFF | ON | OFF | 8/2 Coins* | | | | | |
| | ON | OFF | OFF | ON | ON | 9/2 Coins* | | | | | |
| | ON | OFF | ON | OFF | OFF | 12/2 Coins* | | | | | |
| | ON | OFF | ON | OFF | ON | 14/2 Coins* | | | | | |
| | ON | OFF | ON | ON | OFF | 1/1st Coin | 2/2nd Coin | | | | 3/2 |
| | ON | OFF | ON | ON | ON | 0/1st Coin* | 1/2nd Coin | 1/3rd Coin | 1/4th Coin | | 3/4 |
| | ON | ON | OFF | OFF | OFF | 0/1st Coin* | 1/2nd Coin | 0/3rd Coin** | 2/4th Coin | | 3/4 |
| | ON | ON | OFF | OFF | ON | 1/1st Coin | 1/2nd Coin | 1/3rd Coin | 2/4th Coin | | 5/4 |
| | ON | ON | OFF | ON | OFF | 1/1st Coin | 2/2nd Coin | 1/3rd Coin | 3/4th Coin | | 7/4 |
| | ON | ON | OFF | ON | ON | 1/1st Coin | 2/2nd Coin | 2/3rd Coin | 2/4th Coin | | 7/4 |
| | ON | ON | ON | OFF | OFF | 0/1st Coin*** | 0/2nd Coin*** | 1/3rd Coin | | | 1/3 |
| | ON | ON | ON | OFF | ON | 0/1st Coin** | 0/2nd Coin** | 0/3rd Coin** | 1/4th Coin | | 1/4 |
| | ON | ON | ON | ON | OFF | 0/1st Coin**** | 0/2nd Coin**** | 0/3rd Coin**** | 0/4th Coin**** | 1/5th Coin | 1/5 |
| | ON | ON | ON | ON | ON | 0/1st Coin*** | 0/2nd Coin*** | 1/3rd Coin | 0/4th Coin**** | 1/5th Coin | 2/5 |

o Credits until 2nd coin is dropped.
› Credits until 4th coin is dropped.
› Credits until 3rd coin is dropped.
› Credits until 5th coin is dropped.

**MAXIMUM CREDITS:**
The maximum credits accepted by the machine limits the number of games that can be accumulated by coining, by winning replays or both. The maximum number of credits is selectable by means of switches 25 and 26. Four credit limits are available. Switch settings are listed below.

| MAXIMUM CREDITS | SWITCHES 26 | 25 |
|---|---|---|
| 10 | OFF | OFF |
| 15 | OFF | ON |
| 25 | ON | OFF |
| 40 | ON | ON |

**BALLS PER GAME:**

| # BALLS/GAME | SWITCHES 32 | 31 |
|---|---|---|
| 5 | OFF | ON |
| 4 | ON | OFF |
| 3 | OFF | OFF |
| 2 | ON | ON |

**MATCH FEATURE:**
When the Match Feature is ON, a random number appears on the Match/Credit window and the word Match is illuminated. If the number matches the tens digit in a player's score, a free game is awarded. The Match Feature creates an incentive to play.

| MATCH | SWITCH 28 |
|---|---|
| ON | ON |
| OFF | OFF |

**CREDIT DISPLAY:**

| CREDITS DISPLAYED | SWITCH 27 |
|---|---|
| YES | ON |
| NO | OFF |

**HIGH SCORE FEATURE:**
The game is designed to award an Extra Ball or Free Game at each of the two or three score levels. See Front Door Game Adjustments.

| AWARD | SELF-TEST POSITION 16 | SELF-TEST POSITION 17 |
|---|---|---|
| REPLAY | SET TO "03" | SET TO "03" |
| EXTRA BALL | SET TO "02" | SET TO "02" |
| NOVELTY | SET TO "01" | SET TO "01" |
| NO AWARD | SET TO "00" | SET TO "00" |

For combinations of replay/X-ball/Novelty Modes see page 4A "K. Special Replay/X-ball/Novelty Modes."

**HIGH SCORE TO DATE OR OVER 1,999,990 SCORE FEATURE:**
The game is designed to award free games as an option if high score to date is beat or player exceeds 1,999,990 points. Each time this happens, the high score will reset to 1,999,990 as new high score to beat. This score is displayed on all 4 player score displays at the end of each game as an incentive to play. Recommended setting is underlined.

| HIGH SCORE TO DATE FEATURE | SELF-TEST POSITION 19 |
|---|---|
| No Award | SET TO "00" |
| One Credit | SET TO "01" |
| Two Credits | SET TO "02" |
| <u>Three Credits</u> | SET TO "03" |

State and local laws may regulate the use of the above features, and they have been designed to allow for appropriate adjustment in order to conform to such requirements.

# #1311 GRAND SLAM

## SOUND OPTION

The game is designed to make several tones and noises to announce power-up, game-up, etc. The tones are intended to attract attention to the game and increase game usage. The tones are controlled by pressing Selt-Test button until the #18 shows on the match/credit in display. Now pulse replay button to desired sound setting.

Settings "00", "01"
Most switches associated chimes without feature background.

Setting "02"
Most scoring will have noise effect without background.

Setting "03"
Most scoring will have a noise effect with background.

NOTE: To correct clarities of sound, adjust controls as follows:
- Turn remote volume control on front door all the way up.
- Turn the sound volume control full clockwise, then turn counterclockwise until sound is not garbled.
- Then adjust remote volume control to desired volume level.

## GAME FEATURE OPTIONS

Single & double lite adjustment:

| | | |
|---|---|---|
| Liberal | SW.6 ON | Single & double lites will be on. |
| Conservative | SW.6 OFF | Single & double lites will alternate. |

Flyaway 25K lite adjustment:

| | | |
|---|---|---|
| Liberal | SW.7 ON | 25K will be on at start of game. |
| Conservative | SW.7 OFF | 25K will not be on at start of game. |

Runs to beat advances adjustment:

| | | |
|---|---|---|
| Liberal | SW.8 ON | Runs set up will step off by 10 after each ten is beat, by 20 after 50. |
| Conservative | SW.8 OFF | Runs will stay on set up runs. |

Flyaway special lite adjustment:

| | | |
|---|---|---|
| Liberal | SW.14 ON | Flyaway special & 50K keep on alternating. |
| Conservative | SW.14 OFF | Flyaway special then 50K which stays on. |

Extra Balls per game adjustment:

| | | |
|---|---|---|
| Liberal | SW.15 ON | More then 1 extra ball per game. |
| Conservative | SW.15 OFF | Only 1 extra ball per game. |

Flyaway value lites recall adjustment:

| | | |
|---|---|---|
| Liberal | SW.16 ON | Any flyaway value lites on will come on for next ball. |
| Conservative | SW.16 OFF | Any flyaway value lites will not come on for next ball. |

Runs to beat set-up adjustment.

| | SW.21 | SW.22 | SW.23 | RUNS |
|---|---|---|---|---|
| Liberal | ON | ON | ON | 20 |
| ↑ | OFF | ON | ON | 25 |
| | ON | OFF | ON | 30 |
| | OFF | OFF | ON | 35 |
| | ON | ON | OFF | 40 |
| | OFF | ON | OFF | 45 |
| | ON | OFF | OFF | 50 |
| Conservative ↓ | OFF | OFF | OFF | 55 |

S & L return lane lites adjustment:

| | | |
|---|---|---|
| Liberal | SW.24 ON | S & L lites will be tied together. |
| Conservative | SW.24 OFF | S and L lite will not be tied. |

Number of games replays per game adjustment:

| | | |
|---|---|---|
| Liberal | SW.29 ON | All replays earned will be collected. |
| Conservative | SW.29 OFF | Only 1 replay per player per game. |

5K or 10K outhole bonus score per run adjustment:

| | | |
|---|---|---|
| Liberal | SW.30 ON | 5 K for each run scored. |
| Conservative | SW.30 OFF | 10K for each run scored. |

## C. FRONT DOOR GAME ADJUSTMENTS

### High Score Feature Adjustments:

The game is designed to award an extra ball (option) or a free game at each of three score levels. The recommended levels are on the score card in the game.

Any level from 10,000 to 1,999,990 can be set, as desired. It is also possible to reset or turn off (00) any or all of the levels, if desired.

1. Push and release Self-Test button (See Figure III) at one second intervals approximately six times or until identification number 01 appears on the 'Match/Ball in Play' display.

2. The number on the Player Score Displays is the score level.* It can be increased, if desired, by holding the credit button in. To decrease the score level, hold the credit button in and depress and release the Self-Test button. Release the credit button when the desired number appears. Note that the level changes 10,000 points at a time. If the number '00' is left on the displays, the high score feature is eliminated for that level.

3. Repeat steps 1 and 2 for the second and third score levels. The identification numbers '02' and '03' on the Match/Ball in Play display are for the second and third levels, respectively.

### High Score to Date and 1,999,990 Feature:

The game is designed to award free games when 'High Score to Date' is beat, or if the player exceeds 1,999,990 points.

It is recommended that the level, which will build with play, be periodically reset to the factory recommended level to encourage game play. The adjustment procedure is the same as for the High Score Feature Adjustment, Steps 1 and 2. Continue pushing the Self-Test button until the identification number '04' appears on the 'Match/Ball in Play' display and then do Step 2.

Any level from '00' to 1,999,990 can be set as described. It is to be noted that '00' does NOT turn off the feature, as it does on High Score feature. The feature is turned off by self test position 19 as discussed under 'Back Box Game Adjustments.'

### SELF TEST SETUP FOR 16-19:

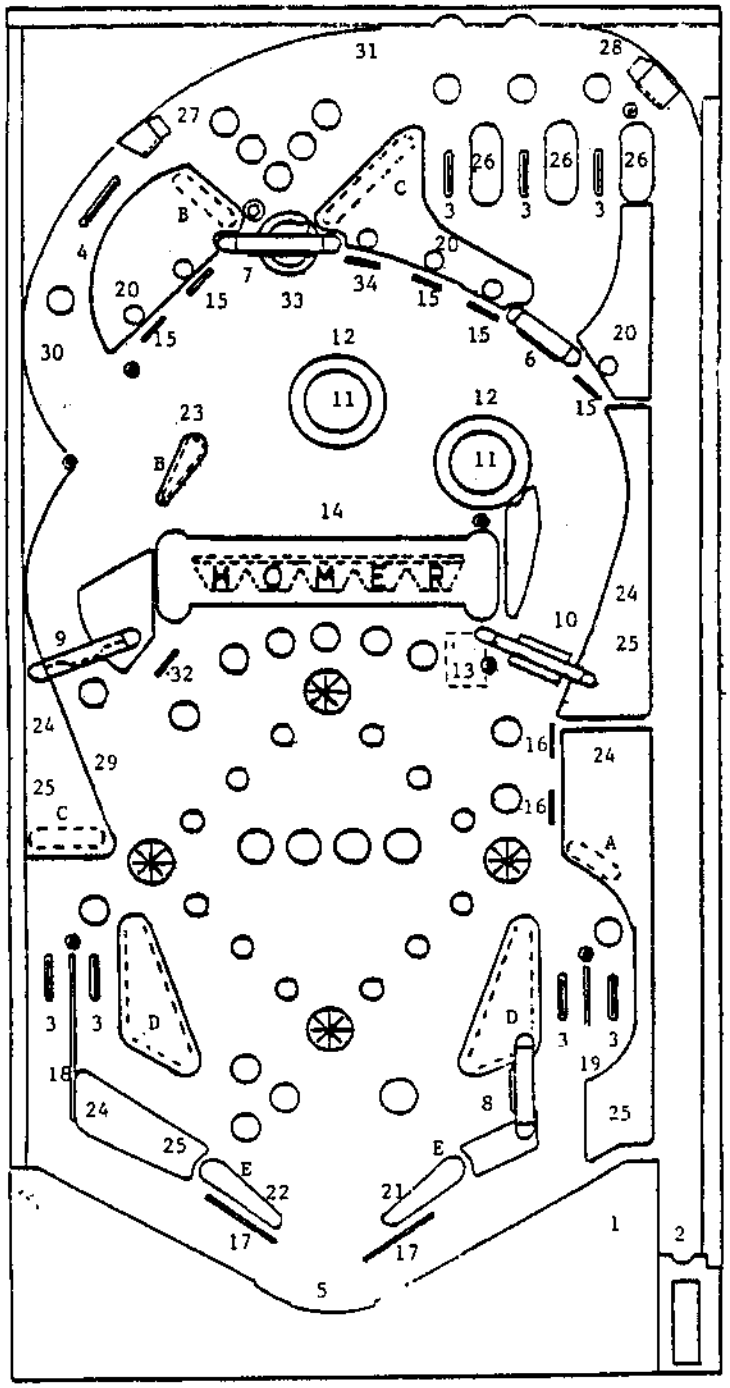
To set up positions 16-19 push and release self test button till 16 shows on match/ball in play. Now pulse replay button for recommended setup from "00" thru "03." Repeat for positions 17, 18 or 19.

### SOUND

In addition to game sounds, there is also a Master Volume Control located on the front door. (refer to page 10)

Please note that these module volume controls should be adjusted prior to setting the control on the front door.

*Can be quickly set to '00' by pressing S33 on the MPU assembly in the back box or Coin Chute switch #3. (See Figure III.)




## GRAND SLAM #1311

### RUBBER PARTS

| | |
|---|---|
| A. R-521 | ¾" Dia. (1) |
| B. R-521-1 | 1" Dia. (3) |
| C. R-521-2 | 1½" Dia. (2) |
| D. R-521-4 | 2½" Dia. (2) |
| E. R-533-3 | Flipper (2) |
| F. R-243 | 5/16" Dia. (20) |
| G. R-414 | Post (2) |

### PANEL PARTS

| | |
|---|---|
| 1. Bottom Arch | P-58771-99 |
| 2. Shooter Gauge | P-6359-60 |
| 3. Rollover Wire & Bracket | ASE-2806-10 (7) |
| 4. Rollover Wire & Bracket | ASE-2806-1 |
| 5. Rollover Wire & Bracket | ASE-2806-21 |
| 6. Ball Gate & Bracket | ASE-2250-11 |
| 7. Ball Gate & Bracket | ASE-2250-24 |
| 8. Ball Gate & Bracket | ASE-2250-90 |
| 9. Ball Gate & Bracket | ASE-2250-94 |
| 10. Spinner & Gate Ass'y | ASE-2250-118 |
| 11. Bumper Cap (Stamped) | A-4009-9 (2) |
| 12. Bumper Collar | C-969-5 (2) |
| 13. Reset Coil Ass'y | ASE-3152-1 |
| 14. Flyaway Target Ass'y | ASE-3155-1 |
| 15. Target Ass'y (White) | ASE-2911-20 (5) |
| 16. Target Ass'y (Yellow) | ASE-2911-34 (2) |
| 17. Buffer Wire | M-121-53 (2) |
| 18. Ball Guide Wire | M-121-30 |
| 19. Ball Guide Wire | M-121-84 |
| 20. Light Shield (Red) | C-1026-11 (6) |
| 21. Flipper Ass'y | ASE-1587-111 |
| 22. Flipper Ass'y | ASE-1587-112 |
| 23. Flipper Ass'y | ASE-1587-127 |
| 24. Screened Plastics | M-1330-206 |
| 25. Clear Plastics & Bushings | A-2890-171 |
| 26. Plastic Ball Guide (Blue) | C-693-12 |
| 27. Ball Rebound Ass'y | A-1475-12 |
| 28. Ball Rebound Ass'y | A-1475-13 |
| 29. Ball Guide Ass'y | A-3032-138 |
| 30. Ball Guide Ass'y | A-3032-139 |
| 31. Ball Guide Ass'y | A-3032-140 |
| 32. Target Switch Ass'y (Yellow) | ASE-29-1-21 (2) |
| 33. Eject Hole Ass'y | ASE-428-41 |
| 34. Target Switch Ass'y (White) | ASE-2911-92 (1) |

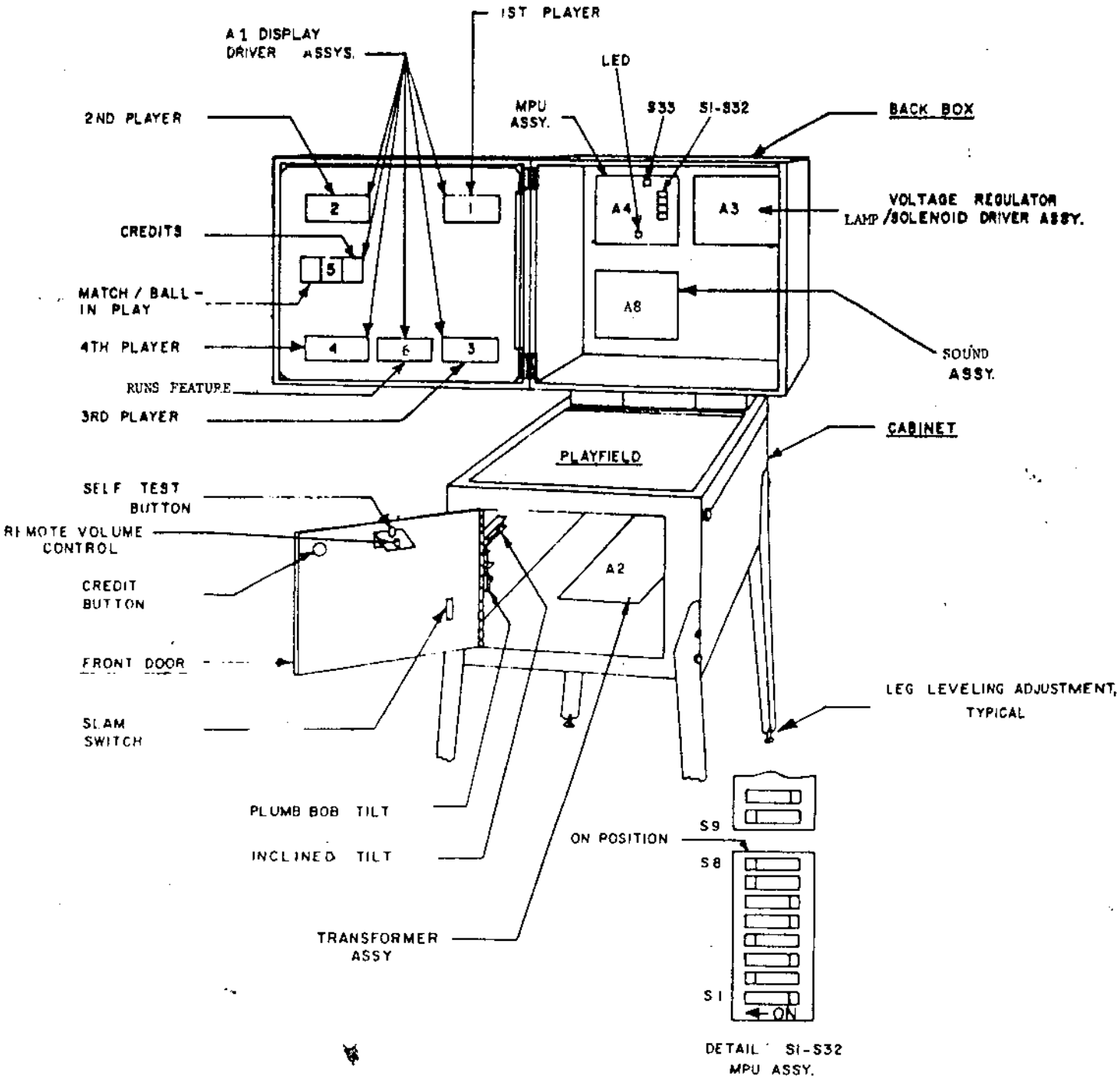



FIGURE III. ELECTRONIC PIN BALL MACHINE

RECOMMENDED

## Instructions, Score Cards and High Score Feature Settings to be used on GRAND SLAM #1311

### 3-BALL

REPLAYS
Instruction Card M-1508-112-E-
Score Card M-1508-112-B W/R
1 Replay at 900,000
1 Replay at 1,400,000

### 5-BALL

REPLAYS
Instruction Card M-1508-112-E -1
Score Card M-1508-112-A W/R
1 Replay at 900,000
1 Replay at 1,400,000

EXTRA BALL
Instruction Card M-1508-112-F -1
Score Card M-1508-112-A W/EE
1 Extra Ball at 1,100,000
1 Extra Ball at 1,900,000

### ADDITIONAL CARDS

REPLAYS

| | | |
|---|---|---|
| M-1508-H | 400,000 | 900,000 |
| M-1508-I | 450,000 | 1,000,000 |
| M-1508-J | 500,000 | 1,000,000 |
| M-1508-K | 500,000 | 1,100,000 |
| M-1508-L | 550,000 | 1,100,000 |
| M-1508-M | 600,000 | 1,100,000 |
| M-1508-N | 650,000 | 1,200,000 |
| M-1508-O | 700,000 | 1,200,000 |
| M-1508-P | 700,000 | 1,400,000 |
| M-1508-Q | 800,000 | 1,400,000 |
| M-1508-R | 900,000 | 1,400,000 |
| M-1508-S | 900,000 | 1,500,000 |
| M-1508-T | 1,000,000 | 1,500,000 |
| M-1508-U | 1,000,000 | 1,600,000 |
| M-1508-V | 1,000,000 | 1,800,000 |
| M-1508-W | 1,000,000 | 1,900,000 |
| M-1508-X | 1,100,000 | 1,800,000 |
| M-1508-Y | 1,100,000 | 1,900,000 |
| M-1508-Z | 1,300,000 | 1,800,000 |
| M-1508-AA | 1,300,000 | 1,900,000 |
| M-1508-BB | 1,500,000 | 1,800,000 |
| M-1508-CC | 1,500,000 | 1,900,000 |
| M-1508-HH | 1,600,000 | |
| M-1508-II | 1,900,000 | |

EXTRA BALL

| | | |
|---|---|---|
| M-1508-DD | 1,000,000 | 1,800,000 |
| M-1508-EE | 1,100,000 | 1,900,000 |
| M-1508-FF | 1,200,000 | 1,800,000 |
| M-1508-GG | 1,400,000 | 1,900,000 |

Instruction Card Novelty
M-1508-112-G
M-1508-112-G-1

M-1508-112-G-2
M-1508-112-G-3

M-1508-112-E-1 Replay
M-1508-112-F-1 Extra Ball

BLANKS (3)
High game to date recommended levels;
(reset periodically)
3 BALL 1,600,000
5 BALL 1,600,000

Scoring over 2,000,000 points will display high score of 1,999,990 at end of game.

(Recommend resetting to lower score if needed)

# #1311 GRAND SLAM
## RECOMMENDED SETTINGS

| RECOMMENDED REPLAY GAME SETTING FOR: | | 3-BALLS | 5-BALL |
|---|---|---|---|
| SINGLE AND DOUBLE LITE | SW.6 | ON | OFF |
| FLYAWAY 25K LITE | SW.7 | ON | OFF |
| RUNS TO BEAT ADVANCES | SW.8 | ON | ON |
| FLYAWAY SPECIAL LITE | SW.14 | ON | ON |
| EXTRA BALLS PER GAME | SW.15 | ON | ON |
| FLYAWAY VLAUE LITES RECALL | SW.16 | ON | ON |
| | SW.21 | OFF | ON |
| RUNS TO BEAT SET-UP | SW.22 | ON | OFF |
| | SW.23 | ON | ON |
| S AND L RETURN LANE LITES | SW.24 | ON | OFF |
| NUMBER OF REPLAY PER GAME | SW.29 | ON | ON |
| 5K OR 10K OUTHOLE BONUS SCORE | SW.30 | ON | OFF |
| BALLS PER GAME | SW.31 | OFF | ON |
| BALLS PER GAME | SW.32 | OFF | OFF |

| | 3-BALL | 5-BALL |
|---|---|---|
| REPLAYS | | |
| Instruction Card | M-1508-112-E- | M-1508-112-E -1 |
| Score Cards | M-1508-112-B W/R | M-1508-112-A W/R |
| Major Mode | Self Test Position 16, 17 Set to "03" | Self Test Position 16, 17 Set to "03" |
| Match | SW.28 ON | SW.28 ON |
| High Score to Date | Self Test Position 19 Set to "03" | Self Test Positon 19 Set to "03" |
| X-BALL | | |
| Instruction Card | | M-1508-112-F -1 |
| Score Card | | M-1508-112-A W/EE |
| Major Mode | | Self Test Position 16, 17 Set to "02" |
| Match | | SW.28 OFF |
| High Score to Date | | Self Test Position 19 Set to "00" |
| NOVELTY | | |
| Instruction Card | M-1508-112-G | M-1508-112-G-1 |
| Major Mode | Self Test Position 16, 17 Set to "01" | Self Test Position 16, 17 Set to "01" |
| Match | SW.28 OFF | SW.28 OFF |
| High Score to Date | Self Test Position 19 Set to "00" | Self Test Position 19 Set to "00" |

# VIII. ROUTINE MAINTENANCE ON LOCATION:

Self-Test routines are written into the game design. They are particularly useful for routine maintenance. The tests are described below. The first test is automatic and occurs on power-up. This test causes the MPU module A4 to examine itself for failures. Seven flashes of an LED indicates proper operation. The second series of self-diagnostic tests causes the MPU to 'exercise' each of the other modules in such a way as to make their faults, if any, obvious. See Figure III and Page ii.

It is recommended that these tests be used several times a week to check out the games before play. If faults are discovered, they may be corrected on location if the operator has a stock of replacement modules. See "Trouble Shooting on Location."

**MPU Module Self-Test:**
At power on, the LED on the MPU module flashes once. (Flicker-Flash.) After a pause, it flashes six more times and goes out. A power-up tune is played to announce game readiness. This indicates proper MPU operating condition and successful completion of the power-up test.

**Game Self-Diagnostic Tests:**

1. Pressing the Self-Test button inside the door initiates the Self-Test routine. See Figures III and IV. All switched lamps flash off and on continuously.

2. Pressing the Self-Test button again causes each digit on each display to cycle from 0 thru 9, and repeat continuously.

3. Pressing the Self-Test button again causes each solenoid to be energized, one at a time, in a continuous sequence. Hold both flipper buttons 'in' during this test. The number appearing on the Player Score displays is the same as the number assigned to the solenoid. The sound of a solenoid pulling-in as a number appears indicates proper operation. The absence of sound is improper. If sound is absent, see Page 17 for help in Solenoid identification.

4. Pressing Self-Test button again causes the sound module to play same tune repeatedly.

5. Pressing the Self-Test button again causes the MPU to search each switch assembly for stuck contacts. If any are found, the number of the first set encountered is flashed on the Player Score displays. The number remains until the fault is cleared. See Page 17 for help in Stuck Switch identification. Other numbers may follow if more stuck contacts are present. If there are no stuck switches, the Match/Ball in Play display flashes '0'.

6. Pressing the Self-Test button 20 more times causes the MPU to step thru the threshold and bookkeeping functions described previously and finally to repeat the power-up test. For more rapid exit to power-up, turn the game off, then on. The game is now ready to play.

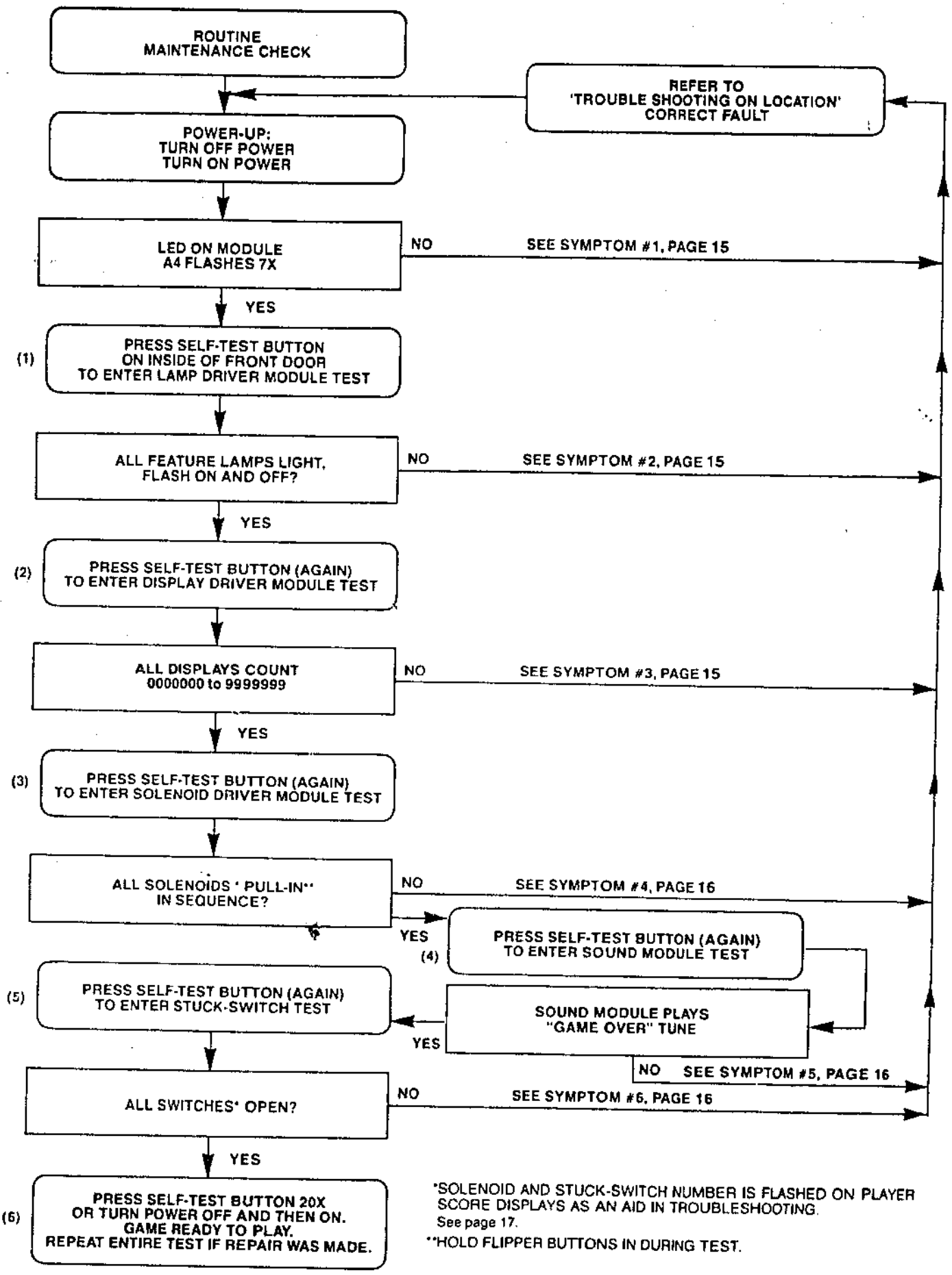
After successful completion of the Self Diagnostic Test procedure, set the game up for play. Exercise each rollover, thumper-bumper, slingshot, etc., by hand until each switch assembly on the playfield has been checked for proper operation. If actuating a switch assembly results in intermittent or no response, clean contacts by gently closing them on a clean business card or piece of paper and wiping until they wipe clean. Regap, if necessary, to 1/16". **Do not burnish or file Gold Plated Switch Contacts.**

# IX. TROUBLESHOOTING ON LOCATION

The game is designed to make troubleshooting easy. Several simple procedures are given herein that cover the greatest percentage of game failures. They are written for an operator on location and require module replacement. (See Figure III) Symptoms and the action to be taken are given for each type of problem.

If the problem is more complicated and is not solved by following this procedure, more detailed procedures are available from Bally. See the Parts List for ordering information.

## FIGURE IV SELF DIAGNOSTIC TEST




*SOLENOID AND STUCK-SWITCH NUMBER IS FLASHED ON PLAYER SCORE DISPLAYS AS AN AID IN TROUBLESHOOTING.
See page 17.

**HOLD FLIPPER BUTTONS IN DURING TEST.

1A) **SYMPTOM:** Game does not play power-up tune when power is turned on. General Illumination is present.

**ACTION:** **A)** Turn power OFF. Open back box. Locate light emitting diode (LED) on MPU module A4.

**B)** Turn Power ON. LED must flash 7X to indicate that module A4 is good. Correct flash sequence is flicker/flash-pause-and then six more flashes and LED goes out.

**C)** If LED comes on, or flashes, less than 7X, turn off power. Replace MPU module A4.

**CAUTION:** **Replacement MPU Module must have same Part Number or incorrect operation will result! See Parts List for MPU Module Part Number.**

Turn power ON.

**D)** If game is correct, it is now ready for play. If game is not correct, refer to Module Replacement procedure. (See Parts List.)

2A) **SYMPTOM:** Not all feature lamps light during game play.

**ACTION:** **A)** With power ON, open front door. Press button (Self-Test switch) once. If the game is correct, **all** feature lamps flash ON and OFF.

**B)** Carefully raise playfield or open back box to gain access to lamps, check fuses F4 & F5 at power module.

**C)** Replace bulbs that do not flash. (Caution. Never change bulbs with power on)

**D)** If game is correct, it is now ready for play.

**E)** If game is not correct, turn power OFF. Replace H.V. Combo Board A3. Turn power ON and repeat A.

**F)** If game is correct, it is now ready for play.*

**G)** If game is not correct, turn power OFF. Replace MPU module A4. See CAUTION, 1C. Turn power ON and repeat A.

**H)** If game is correct, it is now ready for play.* If game is not correct, refer to Module Replacement procedure. (See Parts List.)

2B) **SYMPTOM:** One or some switched lamps always ON.

**ACTION:** Repeat 2AA, AB, AE, and AF and, if necessary AG & AH.

3A) **SYMPTOM:** Display digits improper on **one** or **several,** but less than all Display Driver module(s), A1. Improper: One or several segments always OFF, digits mottled or several segments or digit(s) always ON.

**ACTION:** **A)** With power ON, open front door. Press button (Self-Test switch) twice. If the game is correct, each digit on each Display Driver Module A1 (5 used/game) displays the count 1-9 and 0 continuously in all 6 digit positions. Note defective Display Driver modules.

**B)** Turn power OFF.

**CAUTION: High Voltage is supplied to the Display Driver Modules, A1, from the Solenoid Driver/Voltage Regulator Module A3. Wait 30 seconds for High Voltage to Bleed Off.**

**C)** Replace Display Driver module(s) A1. Turn power ON. Repeat A.

**D)** If game is correct, it is now ready to play.* If game is not correct, refer to Module Replacement procedure. (See Parts List.)

3B) **SYMPTOM:** **All** displays improper (all five display Driver modules). Improper: Digit(s) always on or off/segment(s) always on or off, all displays.

**ACTION:** **A)** Repeat 3AA, and AB.

**B)** Replace MPU module A4. See CAUTION NOTE, 1C. Turn power ON. Repeat A.

**C)** If game is correct, it is now ready to play.* If game is not correct, refer to Module Replacement procedure. (See Parts List.)

**3C) SYMPTON:** One or several displays always off.

**ACTION:** **A)** Do 3AA, AB, AC, and AD.

**B)** Repeat 3BB and BC, if necessary.

**4A) SYMPTOM:** Solenoid(s) do(es) not pull-in during course of game.

**ACTION:** **A)** With power ON, open front door. Press button (Self-Test switch) three times.

**B)** If game was correct, each solenoid would be energized. A number is flashed on the Player Score displays as each solenoid is pulsed. Note any numbers that do not have the sound of a solenoid associated. See Solenoid Identification Table, Page 17 and Figure V.

**C)** Carefully lift the playfield (or open the back box) to gain access to the solenoid. Turn power OFF. Inspect the solenoid.

**D)** If a lead is broken off, repair. Repeat A & B. If game is correct, it is now ready for play.* If solenoid wiring was correct, turn power OFF.

**E)** Replace HV Combo Board module A3. See CAUTION NOTE 3AB.

**F)** Repeat AA & AB. If game is correct, it is now ready to play.* If game is not correct, turn power OFF.

**G)** Replace Sound Module A8.

**H)** Repeat AA and AB if game is correct. It is now ready to play. If game is not correct, turn power OFF."

**I)** Replace MPU module A4. See CAUTION NOTE, 1C.

**J)** Repeat A & B. If game is correct, it is now ready to play.* If game is not correct, refer to Module Replacement Procedure. (See Parts List.)

**4B) SYMPTOM:** Solenoid(s) always energized—Note: if impulse solenoids (ball ejects, slingshots, thumper-bumpers, etc.) are energized continuously, they are subject to damage. Limit troubleshooting to one minute with power ON, followed by **five minutes with power OFF.** Repeat as necessary. Replace damaged solenoids.

**ACTION:** Do 4AA, AB, AE, AF, AG, AH and if necessary, AI and AJ.

**5) SYMPTOM:** No Sound.

**ACTION:** **A)** With Power ON, open front door, press Self-Test switch four times.

**B)** Turn volume control clockwise to Max.

**C)** If correct, sound will be heard. If incorrect, try seating speaker lead connector (J2) and input connector (J1).

**D)** If correct, sound will be heard. If incorrect, refer to Module Replacement procedure."

**6) SYMPTOM:** Feature (Drop Targets, etc.) does not score.

**ACTION:** **A)** With power ON, open front door. Press button (Self-Test switch) five times.

**B)** If the game is correct, Match/Credit display would flash '0'. If a number appears on the Player Score displays, see Switch Assembly Identification Table, Page 17 and Figure V.

**C)** Carefully lift the playfield. Locate the switch assembly identified from the number. Visually inspect the switch assembly. If the contacts are 'stuck,' regap them to 1/16". See section under ADJUSTMENTS. Repeat A & B. If the game is correct, it is now ready to play.* If game is not correct, turn the power OFF.

**D)** Replace MPU module A4. See CAUTION NOTE 1, C.

**E)** Repeat A & B. If the game is correct, it is now ready to play.* If the game is not correct, refer to Module Replacement Procedure. (See Parts List).

**7) SYMPTOM:** Game blows fuse(s) repeatedly.

**ACTION:** See Module Replacement Procedure. F.O. 560

*Turn power On-Off switch OFF and then ON.

# GAME #1311 GRAND SLAM

## SOLENOID IDENTIFICATION TABLE

| Self Test # | SOLENOID IDENTIFICATION |
|---|---|
| 01 | LEFT THUMPER BUMPER |
| 02 | RIGHT THUMPER BUMPER |
| 03 | SAUCER |
| 04 | FLYAWAY RESET |
| 05 | OUTHOLE |
| 06 | KNOCKER |
| 07 | COIN LOCKOUT DOOR |
| 08 | K1 RELAY (FLIPPER ENABLE) |

## SWITCH ASSEMBLY SELF-TEST DISPLAY NUMBERS

| Switch Self Test # | DESCRIPTION | Switch Self Test # | DESCRIPTION |
|---|---|---|---|
| 01 | "H" FLYAWAY | 21 | "L" RETURN LANE |
| 02 | "O" FLYAWAY | 22 | TOP RIGHT GRAND LANE |
| 03 | "M" FLYAWAY | 23 | TOP RIGHT SLAM LANE |
| 04 | "E" FLYAWAY | 24 | TOP RIGHT HOMER LANE |
| 05 | "R" FLYAWAY | 25 | "T" TRIPLE TARGET |
| 06 | CREDIT | 26 | "R" TARGET |
| 07 | RIGHT FLIPPER BUTTON | 27 | "I" TARGET |
| 08 | OUTHOLE | 28 | "P" TARGET |
| 09 | COIN III (RIGHT) | 29 | "L" TRIPLE TARGET |
| 10 | COIN I (LEFT) | 30 | "E" TRIPLE TARGET |
| 11 | COIN II (MIDDLE) | 31 | LEFT AND RIGHT OUTLANE |
| 12 | DOUBLE UPPER LEFT LANE | 32 | SAUCER |
| 13 | RIGHT THUMPER BUMPER | 33 | |
| 14 | LEFT THUMPER BUMPER | 34 | REBOUNDS (3) |
| 15 | TILT (3) | 35 | RIGHT SPINNER |
| 16 | SLAM (2) | 36 | LEFT SIDE GATE |
| 17 | "S" RETURN LANE | 37 | HOME BASE ROLLOVER BUTTON |
| 18 | "T" STEAL TARGET | 38 | #1 BASE ROLLOVER BUTTON |
| 19 | "E" STEAL TARGET | 39 | #2 BASE ROLLOVER BUTTON |
| 20 | "A" TARGET | 40 | #3 BASE ROLLOVER BUTTON |

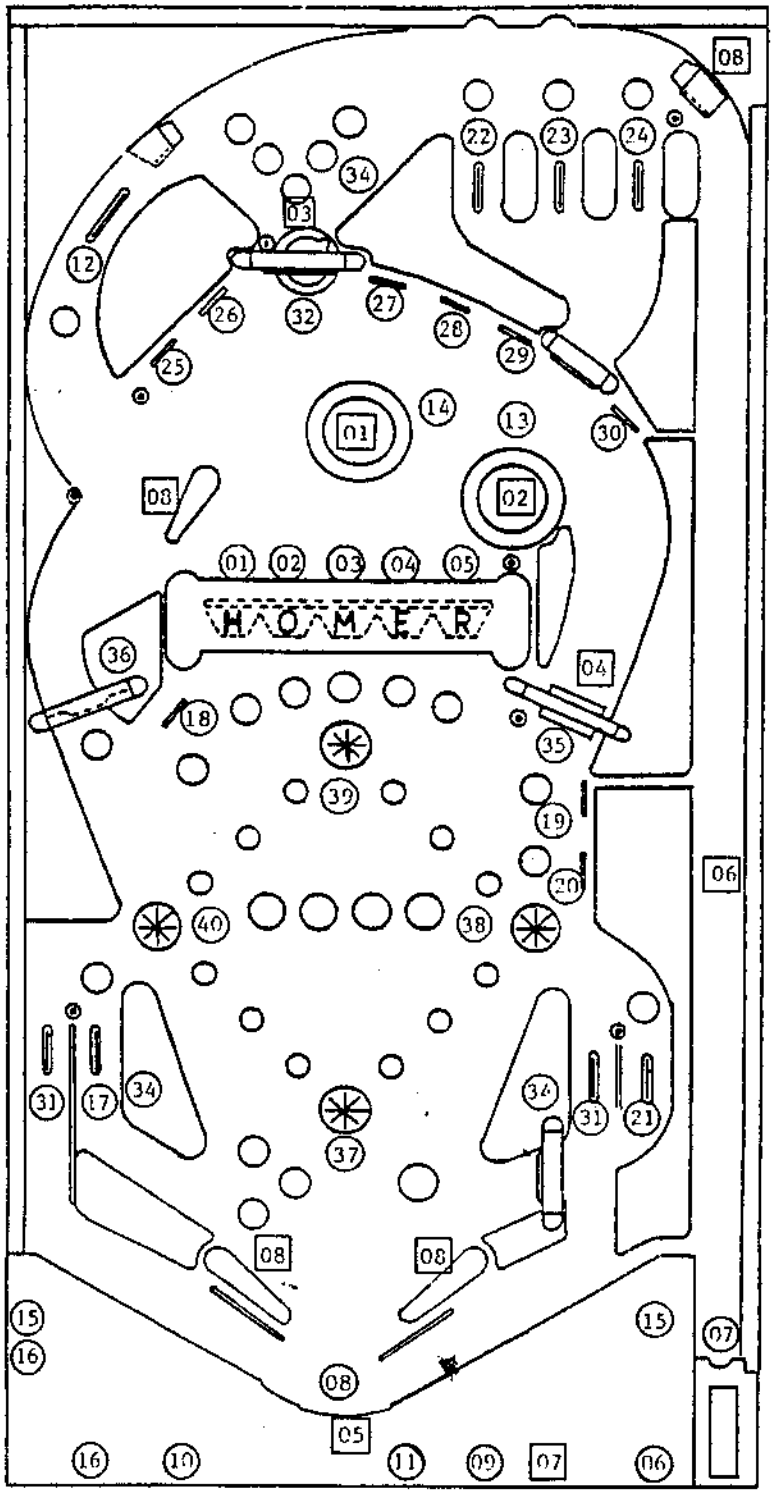



FIGURE V

#1311 GRAND SLAM

O INDICATES SWITCH ASSEMBLY IDENTIFICATION NUMBERS
NOTE: CABINET: 07,15,16
DOOR: 06,09
10,11,16

☐ INDICATES SOLENOID IDENTIFICATION NUMBERS
NOTE: DOOR: 07
BACKBOX: 08
CABINET: 06

## ASSEMBLY ADJUSTMENTS:

### GENERAL:

All switch assemblies consist of leaf springs, contacts, separators, plastic tubing and screws to hold them to the mounting surface. Before attempting to adjust a switch assembly, make sure that these screws are tight. If not, tighten screw closest to the contact end of the leaf spring first. This will prevent the assembly from being secured in such a manner that the leaf springs tend to fan out. In general, all leaf springs are adjusted for a 1/16" gap in the open position and .010" overtravel or wipe in the closed position. All contacts should be in good condition. Unless otherwise instructed, they should be dry or non-lubricated. All contacts should be free of dust and dirt. Contacts, with the exception of the flipper button switch assemblies, are plated to resist corrosion. Filing or burnishing breaks the finish and encourages corrosion. Clean by closing the contacts over a clean piece of paper (e.g. a business card) and wiping gently until the contacts are clean. For the flipper button switch assemblies **ONLY:** Tarnish can be removed with a contact file followed by a burnishing tool. Severely pitted contacts must be replaced as an assembly. In general, contacts need be cleaned or replaced and adjusted only when they are found to be a source of game malfunction.

## X. SERVICE PARTS:

A parts catalogue is available upon request. The catalogue is illustrated and lists all replacement parts for each game manufactured by Bally. Requests should be addressed to:

BALLY MANUFACTURING CORPORATION
2640 WEST BELMONT AVENUE
CHICAGO, ILLINOIS 60618
ATTN: PARTS DEPARTMENT

### SERVICE HINTS:

The Bally playfield has an improved tuff-coat finish with excellent wearing properties. Its life expectance, as well as play appeal, can be extended by periodic cleaning of the playfield.

**DO:** Bally recommends you clean your playfield with Wildcat #125 (Wildcat Chemical Co., 1333 W. Seminary Drive, Ft. Worth, Texas 76115). Wildcat #125 is a combination cleaner and polish. Bally has tried and tested this product and found it to be very effective. If Wildcat #125 is not available, Bally suggests you ask your Distributor to order it. Inspect and hand polish the ball in a clean cloth. A chipped ball must be replaced. It can ruin the finish on the playfield in a short period of time.

**DON'T:** Use water in large quantities, highly caustic cleaners, abrasive cleaners or cleaning pads on the playfield. Do not allow a wax or polish build up. Waxes yellow with age and spoil play appeal.

# XI. PARTS LIST

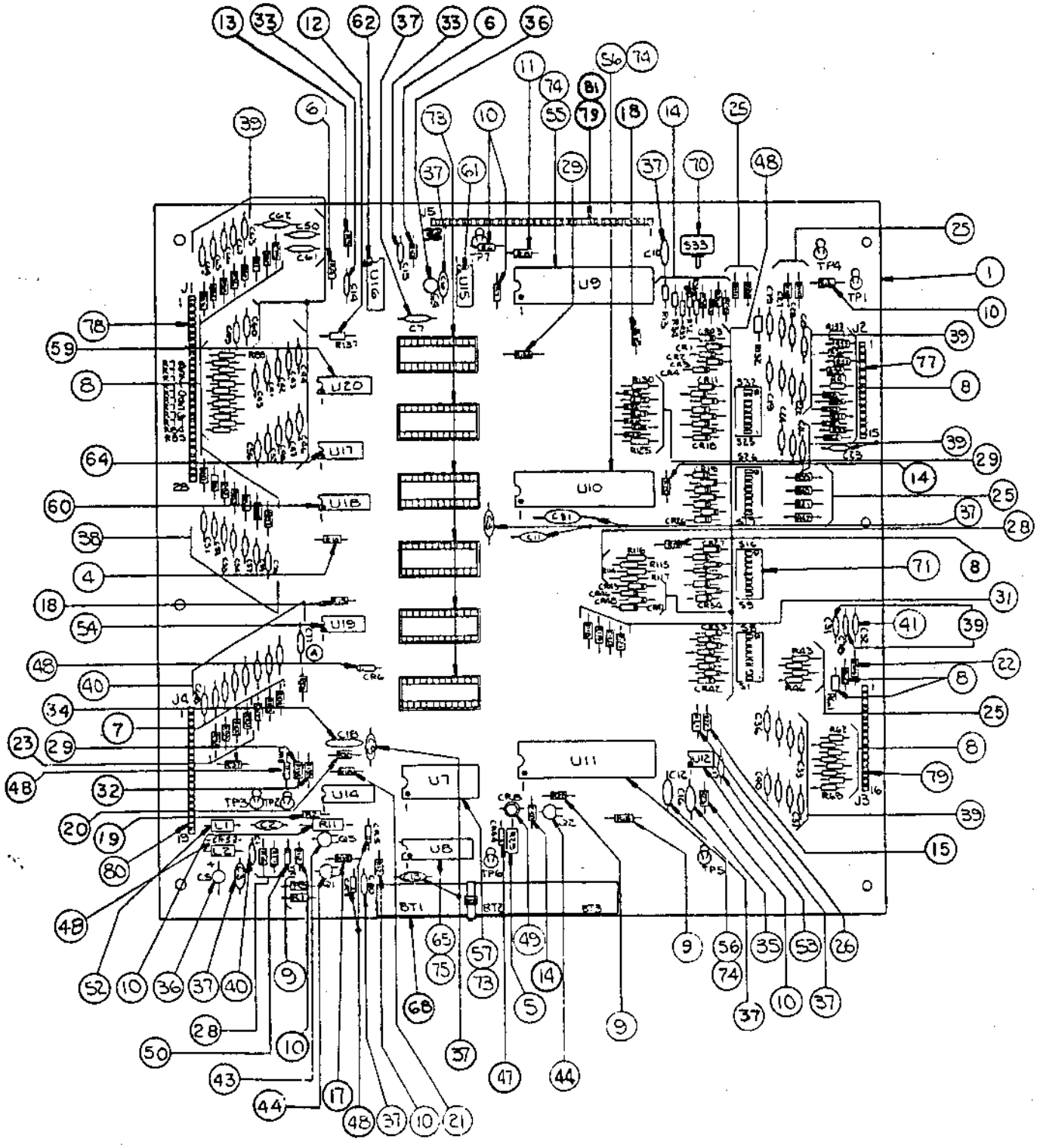
## GRAND SLAM #1311

| MISCELLANEOUS | PART NUMBER |
|---|---|
| Transformer (Domestic or Export) | E-122-170 |
| Bulbs, #555 | E-125-73 |
| Fuse, 1 Amp. 3 AG Slow Blow (Playfield Solenoid Protection) | E-133-44 |
| **ASSEMBLY COILS** | |
| Coin Lockout | FO-36-7000 |
| Flipper (3) | AQ-25-500/ 34-4500 |
| Flyaway Target Reset | AO-27-1300 |
| Saucer | AO-27-1300 |
| Knocker | AR-26-1200 |
| Outhole Kicker | AN-26-1200 |
| Thumper Bumper (3) | AN-26-1200 |
| **PLAYFIELD PARTS** | See Figure II |
| **MODULES** | |
| H.V. Lamp/Solenoid Driver Comb. | AS-2518-147 |
| Display Driver A1 (6 used) on 4 Player (4 used) on 2 Player | AS-2518-21 |
| MPU A4 | AS-3241-2 |
| Transformer & Rectifier A2 | AS-2877-13 |
| Rectifier Board (Part of A2) | AS-2518-151 |
| Sound | AS-3022-18 |
| **REPAIRS PROCEDURES/AIDS** | |
| Module & Component Replacement | F.O. 560-1 |
| AID (Assistance in Diagnostics) Kit, used with F.O. 560-1 | KIT #485-1 |

**MODULE COMPONENTS**
SEE MODULE PARTS LIST

**MODULE COMPONENT STARTER KITS**
(Each kit contains an assortment of the most needed electronic parts for use in Module repair.)
KIT #558—For Rectifier Board (Part of A2)
KIT #503—For MPU Board A4 (less Memory U1-U6)
KIT #492—For Solenoid Drive/Voltage Regulator A3
KIT #493—For Display Drive A1
KIT #494—For Lamp Drive A3
KIT #559—For Sound A8

# AS-2518-133 MPU MODULE



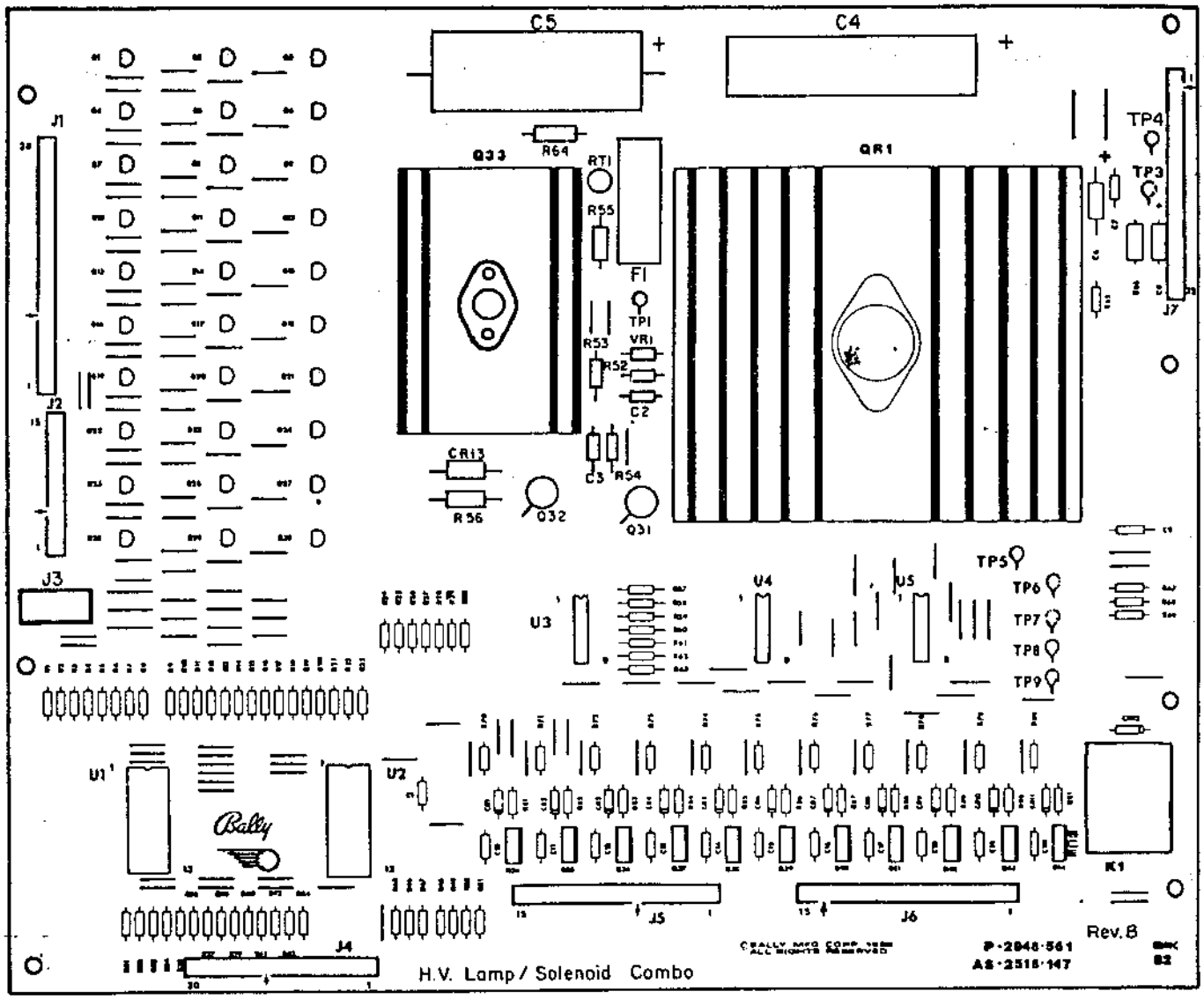
# A4: MPU MODULE

## COMPONENT PARTS LIST

| ITEM | REFERENCE DESIGNATION | BALLY PART # | DESCRIPTION |
|---|---|---|---|
| 1 | A4 (see note 1) | AS-3241-2 | MPU Module Complete. |
| 2 | A4 (see note 2) | AS-2518-133 | MPU Module less Program Memory, U1-6 incl. |
| 3-32 | See Schematic | | Resistors, See schematic for value |
| 33 | C14, C15 | E-00586-0067 | Capacitor, 470 PFD, 1kv |
| 34 | C18 | E-00586-0088 | Capacitor, .05 MFD, 16V |
| 35 | C16 | E-00586-0081 | Capacitor, .1 MFD, 100V |
| 36 | C4, C5 | E-00586-0073 | Capacitor, 4.5 MFD, 25V |
| 37 | C3, C6-C13, C17, C81 | E-00586-0085 | Capacitor, .01 MFD, 25V |
| 38 | C79, C41-C67 | E-00586-0083 | Capacitor, 470 PFD, 50V |
| 39 | C19-C31, C78, C33-C40 | E-00586-0082 | Capacitor, 390 PFD, 50V |
| 40 | C1, C2, C68-C77 | E-00586-0084 | Capacitor, 820 PFD, 50V |
| 41 | C32 | E-00586-0077 | Capacitor, 3000 PF, 1 kv |
| 43 | Q5 | E-00585-0023 | Transistor PNP (MPS-3702) |
| 44 | Q1, Q2 | E-00585-0031 | Transistor (2N3904) |
| 47 | CR44 | E-00587-0006 | Diode (IN4004) |
| 48 | CR1-CR7, CR11-CR43, CR45-CR49, CR52 | E-00587-0014 | Diode (IN4148) |
| 49 | CR8 | E-00679 | LED (Green) |
| 50 | VR1 | E-00598-0008 | Diode Zener (8.2V, IN9598) |
| 52 | L1, L2 | E-00604-0003 | Inductor, 22 Micro Hy. |
| 53 | U12 | E-00620-0004 | Timer (555) |
| 54 | U19 | E-00620-0005 | Quad 2 Input (4011) |
| 55 | U9 | E-00620-0028 | MPU I.C. (6800) |
| 56 | U10, U11 | E-00620-0029 | PIA I.C. (6820) |
| 57 | U7 | E-00620-0030 | RAM I.C. (6810) |
| 59 | U20 | E-00620-0032 | HEX Buffer I.C. (14502B) |
| 60 | U14, U18 | E-00620-0033 | HEX Inverter (4049B) |
| 61 | U15 | E-00620-0034 | Quad Memory Drive (MC3459L) |
| 62 | U16 | E-00620-0035 | Dual Monostable (9602) |
| 64 | U17 | E-00620-0041 | Quad 2 Inputs (74L00N) |
| 65 | U8 | E-00620-0042 | RAM (C MOS, P5101L-3) |
| 68 | BT1, BT2, BT3 | E-00628-0003 | Battery |
| 70 | S33 | E-00658-0001 | Push Button Switch |
| 71 | S1-S8, S9-S16, S17-S24, S25-S32 | E-00677 | DIP Switch |
| 73 | | E-00712 | 24 Pin Socket |
| 74 | | E-00712-0001 | 40 Pin Socket |
| 75 | | E-00712-0003 | 22 Pin Socket |
| 77 | J2 | E-00715 | 15 Pin Wafer Connector |
| 78 | J1 | E-00715-0004 | 28 Pin Wafer Connector |
| 79 | J3, J5 | E-00715-0017 | 16 Pin Wafer Connector |
| 80 | J4 | E-00715-0018 | 19 Pin Wafer Connector |
| 81 | J5 | E-00715-0024 | 17 Pin Wafer Connector |

**NOTE:** Order replacement memory chips U1-U6, specifying game, socket and part number stamped on chip.

# AS-2518-147 H.V. LAMP/SOLENOID DRIVER COMBINATION BOARD



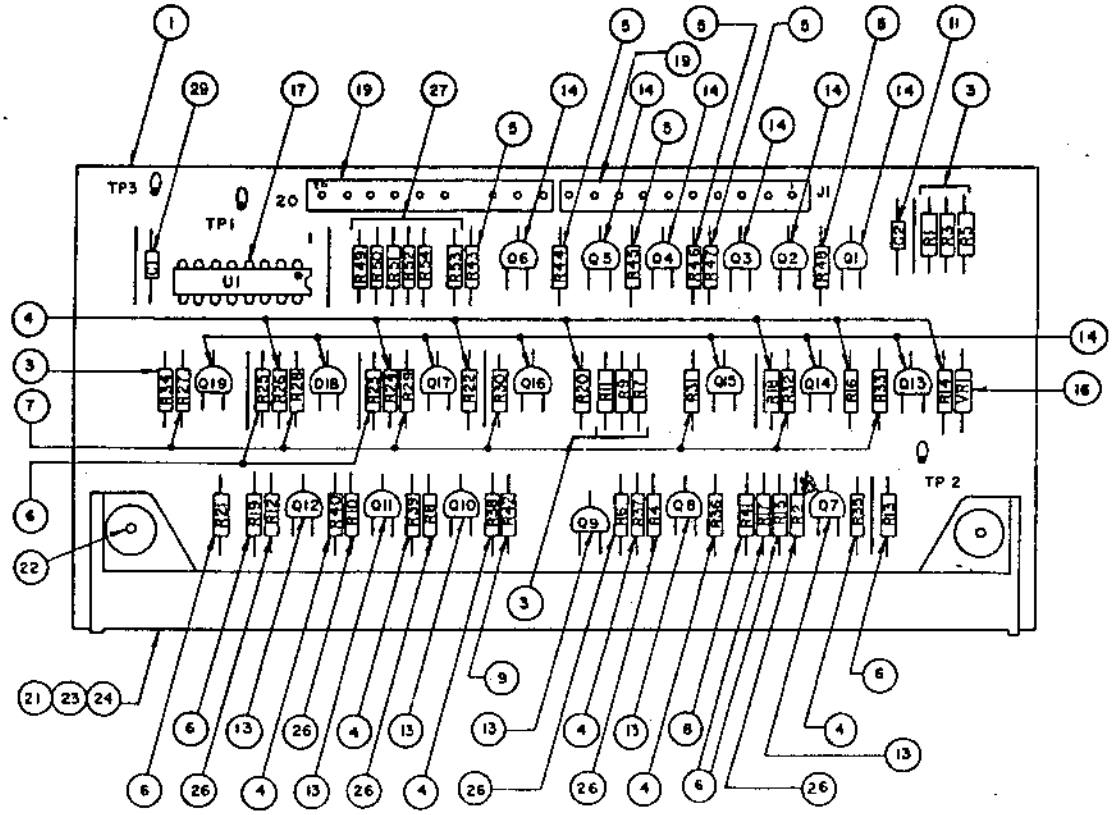

## AS-2518-147 H. V. LAMP/SOLENOID COMBO ASSY.

| DESCRIPTION | DESIGNATION | QUANTITY | PART NO. |
|---|---|---|---|
| .01uf 25v cer cap | C1 | 1 | E-586-85 |
| .01uf 500v cer cap | C2, 3 | 2 | E-586-65 |
| .1uf 50v cer cap | C6, 8, 9 | 3 | E-586-159 |
| .002uf 1kv cer cap | C10-20 | 11 | E-586-64 |
| 2uf 50v Lythic cap | C7 | 1 | E-586-63 |
| 160uf 350v Lythic cap | C5 | 1 | E-586-59 |
| 11,000uf 20v Lythic cap | C4 | 1 | E-586-62 |
| Tie wraps | used with C4, 5 | 4 | E-647-5 |
| Jumpers red or eqv. | used with C4 | 2 | M-1777-155 (or eqv.) |
| IN4004 Diode | CR1-13 | 13 | E-587-15 |
| 3/16A 8AG Fuse | F1 | 1 | E-133-29 |
| Fuse Clips | F1 | 2 | E-148-21 |
| 3 Pin M & L male header | J3 | 1 | E-805-3 |
| 15 Pin .156 header* | J5, 6 | 2 | E-736-15 |

## AS-2518-147c H. V. LAMP/SOLENOID COMBO ASSY. (REV. B)

| DESCRIPTION | DESIGNATION | QUANTITY | PART NO. |
|---|---|---|---|
| 15 Pin .100 header* | J2 | 1 | E-766-15 |
| 20 Pin .100 header* | J4 | 1 | E-766-20 |
| 25 Pin .100 header* | J7 | 1 | E-766-25 |
| 28 Pin .100 header* | J1 | 1 | E-766-28 |
| 43v Relay | K1 | 1 | E-146-795 |
| 2N5060 SCR | Q1-30 | 30 | E-585-14 |
| 2N3440 Transistor | Q31, 32 | 2 | E-585-41 |
| 2N3584 Transistor | Q33 | 1 | E-585-42 |
| 5v Regulator | QR1 | 1 | E-710 |
| SE9302 or 2N6045 Transistor | Q34-44 | 11 | E-585-34 |
| T05 Heat Sink | used with Q32 | 1 | E-682 |
| T066 Heat Sink | used with Q33 | 1 | E-682-1 |
| T03 Heat Sink | used with QR1 | 1 | E-682-2 |
| T066 Sil Pad | used with Q33 | 1 | E-889-2 |
| T03 Sil Pad | used with QR1 | 1 | E-889-1 |
| Screws | used with Q33 | 2 | SWPR-632-1112 |
| Lock washers int. tooth | used with Q33, QR1 | 4 | M-1701-6 |
| Nuts | used with Q33, QR1 | 4 | N-632-2112 |
| Screws self-tapping | used with Q33 | 2 | SWPR-632-1105 |
| Screws self-tapping | used with Q33 | 2 | SWPR-632-1112 |
| Flat washers | used with Q33, QR1 | 4 | PW-6-12 |
| Screws | used with QR1 | 2 | LSPR-632-1112 |
| Hex standoffs | used with Q33 | 2 | M-1827-1 |
| H. V. Shield | used with Q33 | 1 | M-1838 |
| Lockwashers | used with Q33 | 2 | M-1700-6 |
| 2.2ohm ¼w 5% Resistor | R65 | 1 | E-105-211 |
| 100ohm ½w 5% Resistor | R66 | 1 | E-105-265 |
| 120ohm ¼w 5% Resistor | R69-80 | 12 | E-105-212 |
| 390ohm ¼w 5% Resistor | R56 | 1 | E-105-266 |
| 1.2K ¼w 5% Resistor | R52, 57-63, 68 | 9 | E-105-222 |
| 2K ¼w 5% Resistor | R1-30, 67 | 31 | E-105-237 |
| 330ohm ¼w 5% Resistor | R81-91 | 11 | E-105-219 |
| 3.9K ¼w 5% Resistor | R48-51 | 4 | E-105-257 |
| 8.2K ¼w 5% Resistor | R55 | 1 | E-105-223 |
| 20K ¼w 5% Resistor | R31, 33, 35, 37, 39, 41, 43 | 7 | E-105-242<br>~~E-105-219~~ |
| 22K ½w 5% Resistor | R54 | 1 | E-105-218 |
| 33K ¼w 5% Resistor | R45-47 | 3 | E-105-282 |
| 82K ½w 5% Resistor | R53 | 1 | E-105-217 |
| 100K Iw 5% Resistor | R64 | 1 | E-105-254 |
| 2.2m ½w 5% Resistor | R32, 34, 36, 38, 40, 42, 44 | 7 | E-105-256 |
| 25K Pot P.C. 1 Turn | RT1 | 1 | E-599-14 |
| Test Point Loops | TP1-8 | 8 | P-5399 |
| 4514 I.C. | U1, 2 | 2 | E-620-37 |
| 74LS138 I. C. | U3 | 1 | E-620-181 |
| CA3081 Transistor array | U4, 5 | 2 | E-681 |
| IN5275A 140v Zener | VR1 | 1 | E-598-10 |
| P.C.B. M-645-723 | — | 1 | P-2948-561 |
| Jumpers | — | 149 | M-1777-126 |

# AS-2518-21 CREDIT DISPLAY DRIVER MODULE

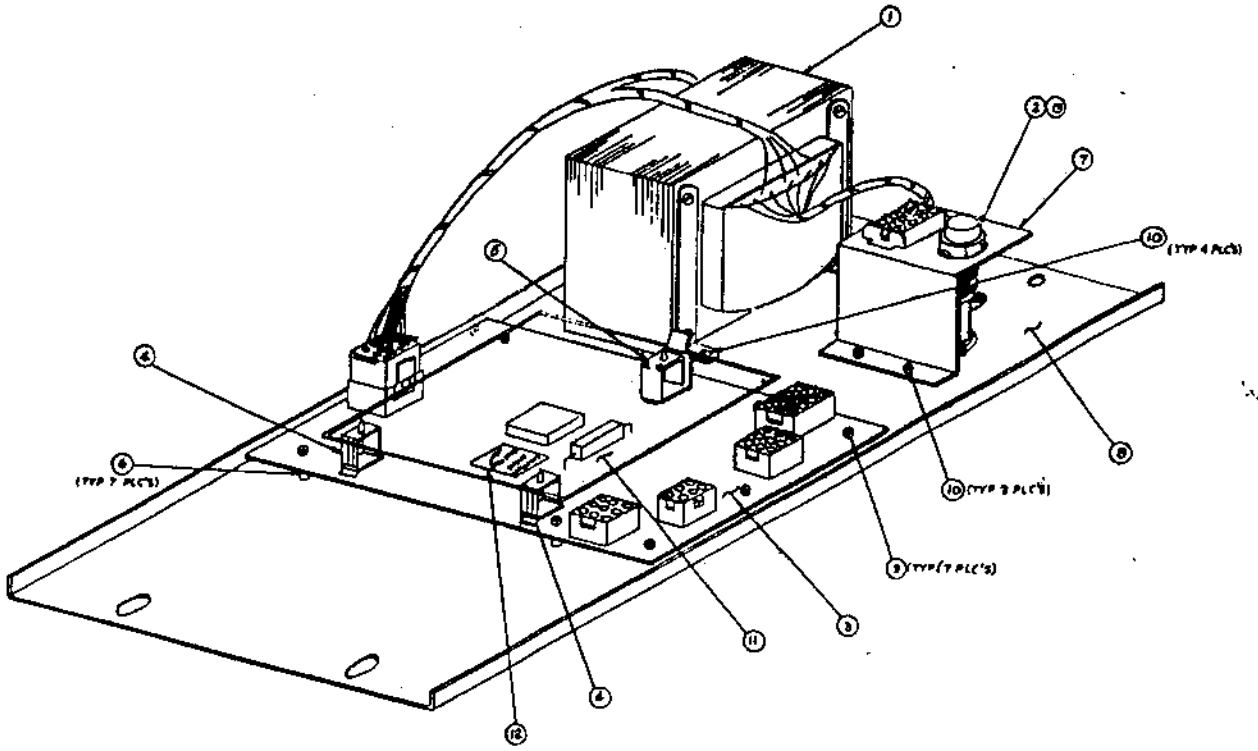



## A1: 6 DIGIT DISPLAY DRIVER MODULE
### COMPONENT PARTS LIST

| ITEM | QTY. | REFERENCE DESIGNATION | BALLY PART # | DESCRIPTION |
|---|---|---|---|---|
| 1 | 1 | A1 | AS-2518-21 | 6 Digit Display Driver, Complete |
| 3 | 7 | R1, R3, R5, R7, R9, R11, R34 | E-105-331 | Resistor, 100K Ω |
| 4 | 13 | R14, R16, R18, R20, R22, R24, R26, R35, R36, R37, R38, R39, R40 | E-105-227 | Resistor, 300K Ω |
| 5 | 6 | R43, R44, R45, R46, R47, R48 | E-105-228 | Resistor, 9.1K Ω |
| 6 | 7 | R13, R15, R17, R19, R21, R23, R25 | E-105-229 | Resistor, 1.5K Ω |
| 7 | 7 | R27, R28, R29, R30, R31, R32, R33 | E-105-222 | Resistor, 1.2K Ω |
| 8 | 1 | R41 | E-105-231 | Resistor, 39K Ω |
| 9 | 1 | R42 | E-105-271 | Resistor, 240K Ω |
| 10 | | | | |
| 11 | 1 | C2 | E-586-65 | Capacitor, .01 MFD, 500V |
| 13 | 6 | Q7, Q8, Q9, Q10, Q11, Q12 | E-585-32 | Transistor (2N5401) |
| 14 | 13 | Q1, Q2, Q3, Q4, Q5, Q6, Q13, Q14, Q15, Q16, Q17, Q18, Q19 | E-585-33 | Transistor (MPS-A42) |
| 16 | 1 | VR1 | E-598-7 | Zener Diode, 110V |
| 17 | 1 | U1 | E-620-38 | I.C. Decoder |
| 18 | | | | |
| 19 | 2 | J1 | E-715-34 | 10 Pin Wafer Pin Connector |
| 21 | 1 | DS1 | E-680 | Digital Display Panel |
| 22 | 2 | | M-1836 | Hi-Lo Screw, W/H |
| 23 | 1 | | P-2399 | Display Mounting (Top) |
| 24 | 1 | | P-2399-1 | Display Mounting (Bottom) |
| 26 | 6 | R2, R4, R6, R8, R10, R12 | E-105-287 | Resistor, 2.2K Ω |
| 27 | 6 | R49, R50, R51, R52, R53, R54 | E-105-242 | Resistor, 20K Ω |
| 28 | As Req'd | | | Wire Jumper |
| 29 | 1 | C1 | E-586-85 | Capacitor, .01 MFD, 25V |

**NOTE:** INTERCHANGEABLE WITH AS-2518-15

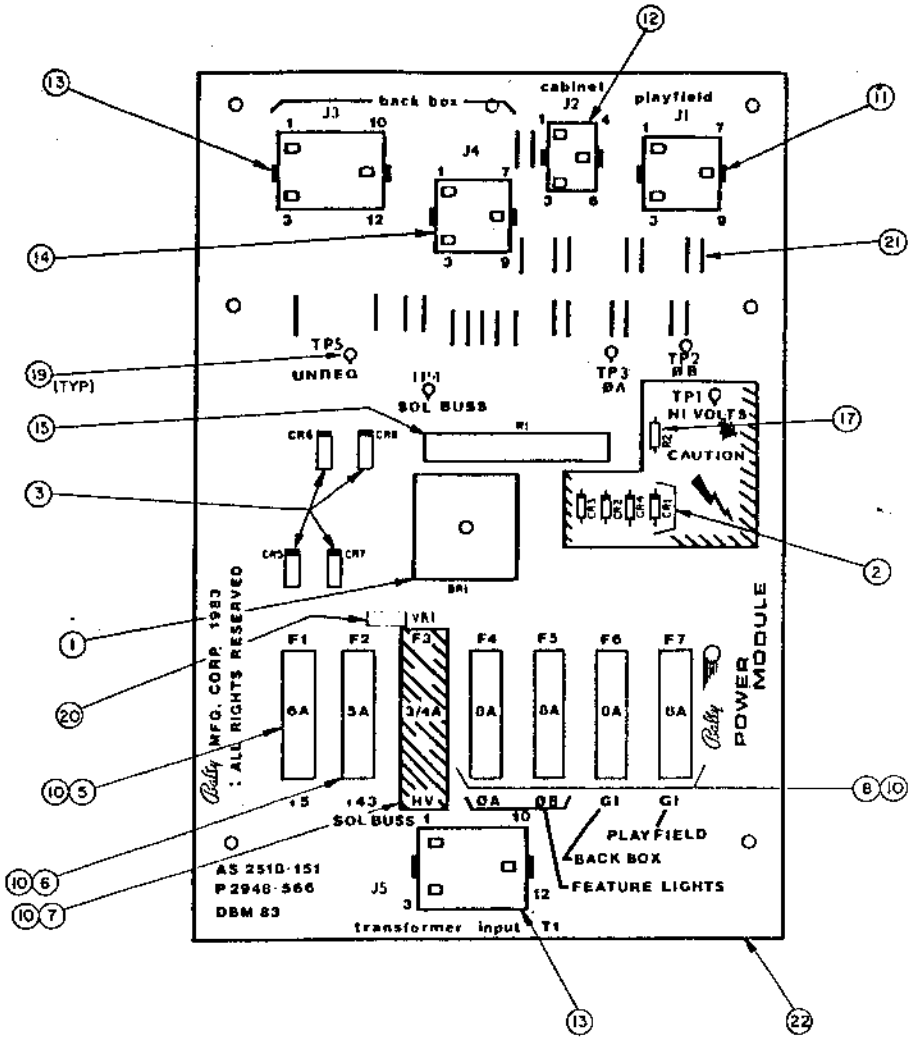
# A2: POWER TRANSFORMER MODULE



## COMPONENT PARTS LIST

| ITEM | REFERENCE DESIGNATION | BALLY PART # | DESCRIPTION |
|---|---|---|---|
| 0 | A2 | AS-2877-13 | Power Transformer Module, Complete |
| 1 | | AS-3071-15 | Transformer |
| 2 | | E-148-25 | Fuse Holder |
| 3 | A2 | AS-2518-151 | Power Module Assy. |
| 4 | | M-1829-4 | Hinged Support |
| 5 | | M-1829-3 | Edge Holder |
| 6 | | M-1829-5 | Spacer |
| 7 | | P-6442-244b | Fuse & Connect Brkt. |
| 8 | | P-6442-246 | Chassis |
| 9 | | RLPP-832-1114 | Screw |
| 10 | | RLPP-1032-1806 | Screw |
| 11 | | P-2692-2 | Shield |
| 12 | | M-469-963 | High Voltage Sticker |
| 13 | | E-133-24 | 3A S.B. Fuse |

# AS-2518-151 RECTIFIER BOARD ASSEMBLY




| ITEM | DESIGNATION | DESCRIPTION | QUANTITY | PART NO. |
|---|---|---|---|---|
| 1 | BR1 | 35A BRIDGE, KBPC-35 | 1 | E-602-7 |
| 2 | CR1-4 | 1N4004 DIODE | 4 | E-587-15 |
| 3 | CR5-8 | 6A DIODE, MR751 | 4 | E-587-32 |
| 4 | | | | |
| 5 | F1 | 6A FUSE | 1 | E-133-6 |
| 6 | F2 | 5A FUSE | 1 | E-133-5 |
| 7 | F3 | 3/4A FUSE | 1 | E-133-28 |
| 8 | F4-7 | 8A FUSE | 4 | E-133-8 |
| 9 | | | | |
| 10 | F1-7 | FUSE CLIP | 14 | E-148-21 |
| 11 | J1 | 9 CKT. M & L SOCKET HEADER | 1 | E-806-9 |
| 12 | J2 | 6 CKT. M & L PIN HEADER | 1 | E-805-6 |
| 13 | J3, 5 | 12 CKT. M & L PIN HEADER | 2 | E-805-12 |
| 14 | J4 | 9 CKT. M & L PIN HEADER | 1 | E-805-9 |
| 15 | R1 | 600 OHM 10W. 10% RESISTOR | 1 | E-104-92 |
| 16 | | | | |
| 17 | R2 | 100K 1/4W. 5% RESISTOR | 1 | E-105-226 |
| 18 | | | | |
| 19 | TP1-5 | TEST POINT LOOPS | 5 | P-5399 |
| 20 | VR1 | VARISTOR | 1 | E-623 |
| 21 | | JUMPERS | 24 | M-1777-126 |
| 22 | | P.C.B. M-645-728 | 1 | P-2948-566 |

# A8: SOUND MODULE
## COMPONENT PARTS LIST

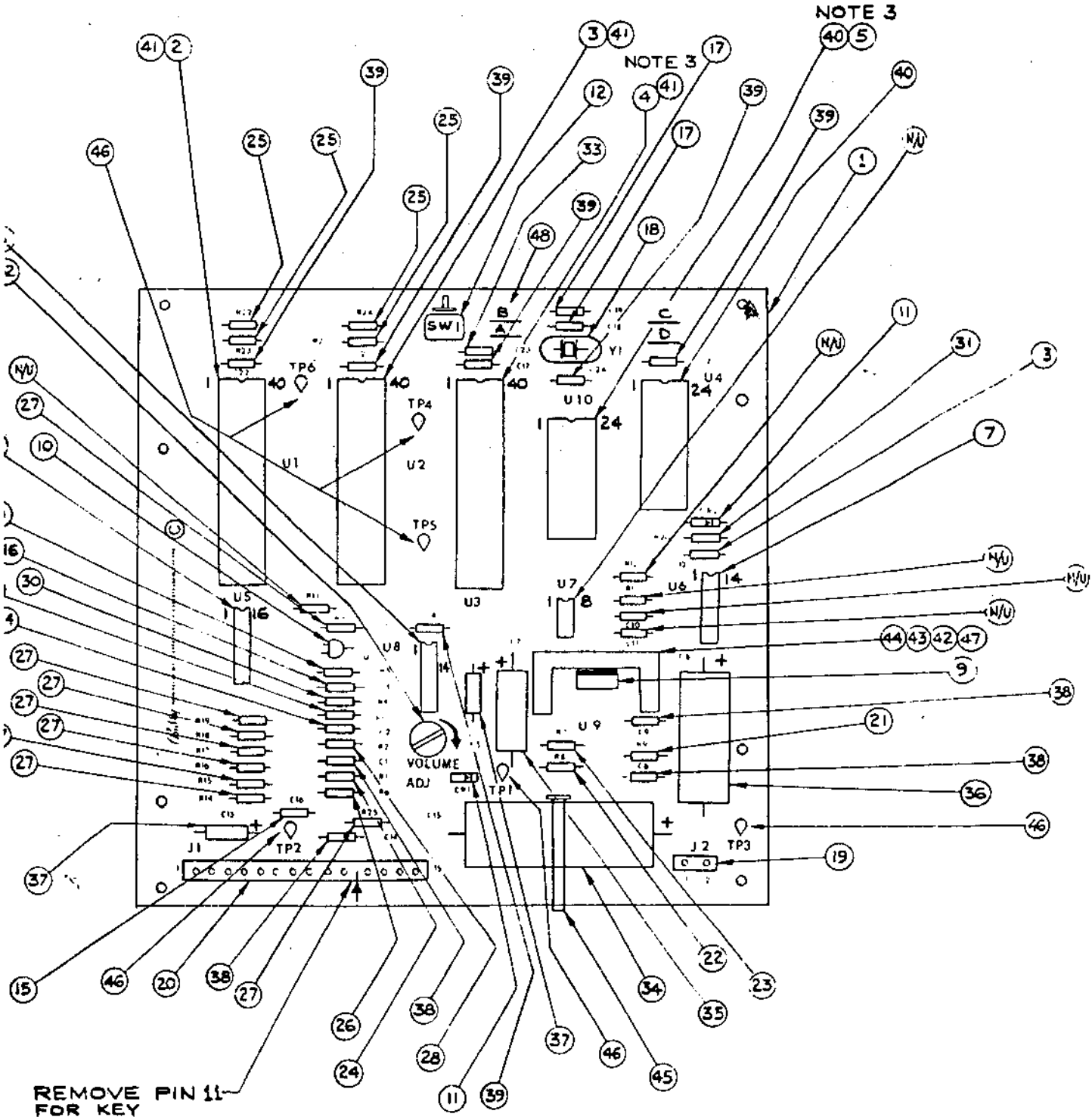
| ITEM | REFERENCE DESIGNATION | BALLY PART NO. | DESCRIPTION |
|---|---|---|---|
| 1 | A8 (see note 1) | AS-3022-18 | PWB Module Complete |
| 2 | U1 | E-620-124 | Sound Chip AY-3-8910 |
| 3 | U2 | E-620-29 | PIA, 6820/21 |
| 4 | U3 | E-620-125 (E620-128) | CPU, 6808 (6802 Note 3) |
| 5 | U10 | E-620-30 | Ram, 6810 (Note 3) |
| 6 | U5 | E-620-33 | Hex Inverter 4049B |
| 7 | U6 | E-620-5 | Quad 2 Input 4011B |
| 8 | U8 | E-620-126 | Amp, LM3900 |
| 9 | U9 | E-620-127 | Power Amp, TDA 2002 |
| 10 | Q1 | E-585-31 | Transistor, 2N3904 |
| 11 | CR1, 2 | E-587-6 | Diode, 1N4004 |
| 12 | SW1 | E-658-1 | Switch |
| 13 | C12 | E-586-118 | Cap. .2MF ±20% Y5P, 16 V. |
| 14 | C2 | E-586-130 | Cap. .47 ±20% |
| 15 | C16 | E-586-83 | Cap. 470 PF 50 V. |
| 16 | C3 | E-586-120 | Cap. 68 PF, ±20% 1K |
| 17 | C18, 19 | E-586-121 | Cap. 27 PF, ±20% 1K |
| 18 | Y1 | E-744-5 | Crystal, 3.579545 MHZ |
| 19 | J2 | E-736-2 | Connector, Wafer, 2 Pin KK156 |
| 20 | J1 | E-736-15 | Connector, Wafer, 15 Pin KK156 |
| 21 | R9 | E-105-196 | Resistor, 1 Ohm, ¼ W., 5% |
| 22 | R8 | E-105-211 | Resistor, 2.2 Ohm, ¼ W., 5% |
| 23 | R7 | E-105-303 | Resistor, 220 Ohm, ¼ W., 5% |
| 24 | R1 | E-105-230 | Resistor, 1 K, ¼ W., 5% |
| 25 | R21, 22, 23, 24 | E-105-238 | Resistor, 3.3K. Ohm, ¼ W., 5% |
| 26 | R6 | E-105-239 | Resistor, 4.7K., ¼ W., 5% |
| 27 | R3, 14, 15, 16, 17, 18, 19, 25 | E-105-185 | Resistor, 10K., ¼ W., 5% |
| 28 | R2 | E-105-245 | Resistor, 30K., ¼ W., 5% |
| 29 | R10 | E-105-252 | Resistor, 180K., ¼ W., 5% |
| 30 | R4 | E-105-225 | Resistor, 200K., ¼ W., 5% |
| 31 | R5, 20 | E-105-285 | Resistor, 1M, ¼ W., 5% |
| 32 | RT1 | E-599-16 | Potentiometer 1K |
| 33 | C23 | E-586-122 | Cap. .001 ±20% 2SF |
| 34 | C15 | E-586-123 | Cap. 4700 MF @ 25 V. |
| 35 | C7 | E-586-124 | Cap. 470 MF @ 6.3 V |
| 36 | C8 | E-586-129 | Cap. 470 MF @ 16 V. |
| 37 | C5, 13 | E-586-90 | Cap. 1 MF @ 50 V. |
| 38 | C9, 1, 14, 6 | E-586-89 | Cap. .1 MF |
| 39 | C4, 22, 17, 21, 20, 24 | E-586-85 | Cap. .01 MF |
| 40 | XU10, XU4 | E-712 | Socket, 24 Pin |
| 41 | XU1, XU2, XU3 | E-712-1 | Socket, 40 Pin |
| 42 | Used with 43 | LSPR-00632-1106 | Bolt, 6 x 32 x ⅜ |
| 43 | Used with 42 | N-00632-2112 | Nut, 6 x 32 |
| 44 | H.S for U9 | E-682-8 | Heat Sink, 6030BTT |
| 45 | Used with C15 | E-647-5 | Ty Rap |
| 46 | TP1, 2, 3, 4, 5, 6 | P-5399 | Test Point |
| 47 | Use with 44, 9 | M-1834 | Thermal Grease |
| 48 | Jumper, B | W-1211c | 22 AWG Wire, Solid Tinned |
| | | | Schematic |

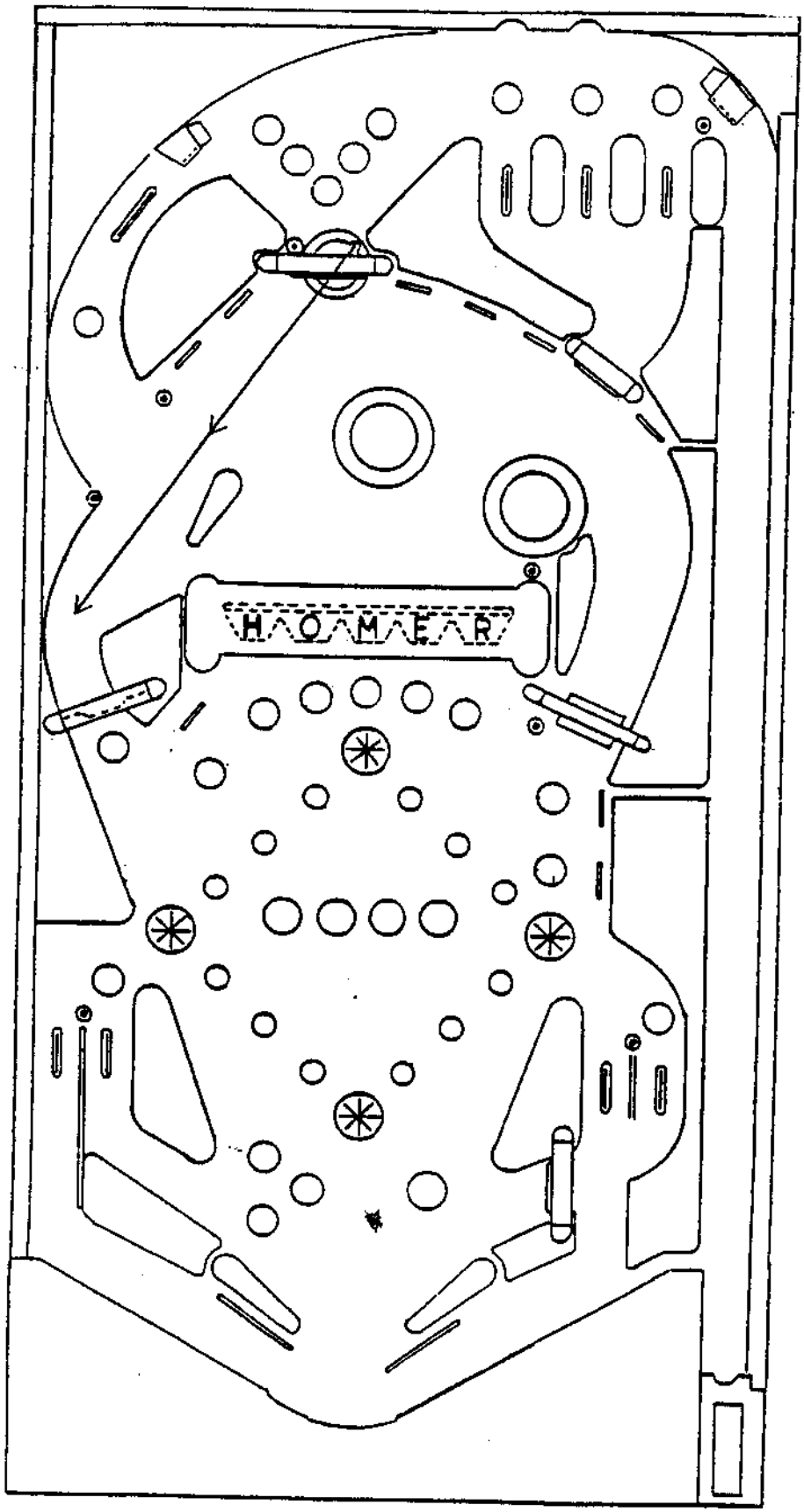
**NOTE 1:** When ordering specify name of game.

**NOTE 2:** Order replacement memory chip U4 specifying name of game and part no. stamped on chip.

**NOTE 3:** When using item 4, 6808 you must use item 5, 6810 and the "B" jumper. When item, 6802 is available delete item 5 and use "A" jumper.

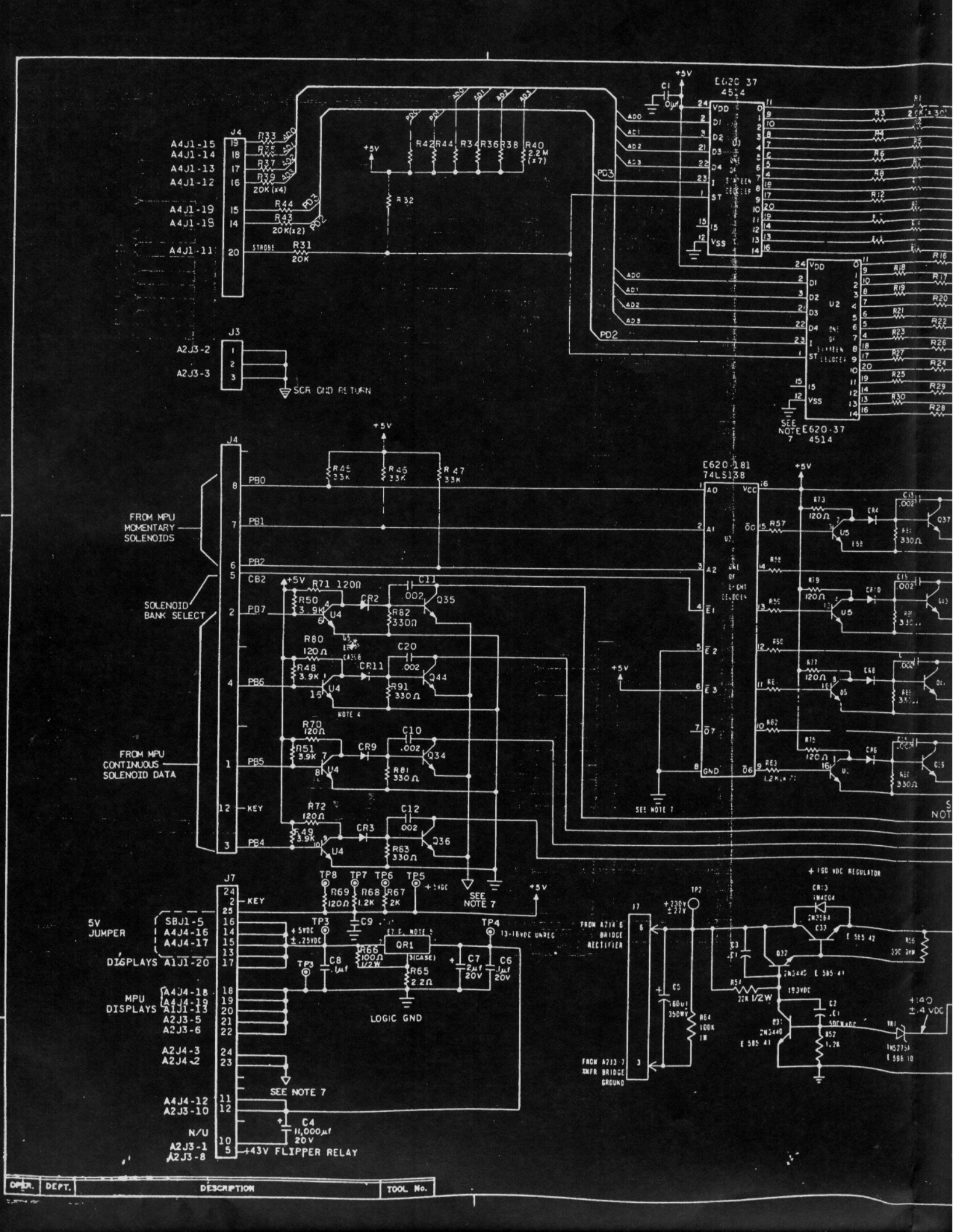
# AS-2518-51 SOUND MODULE





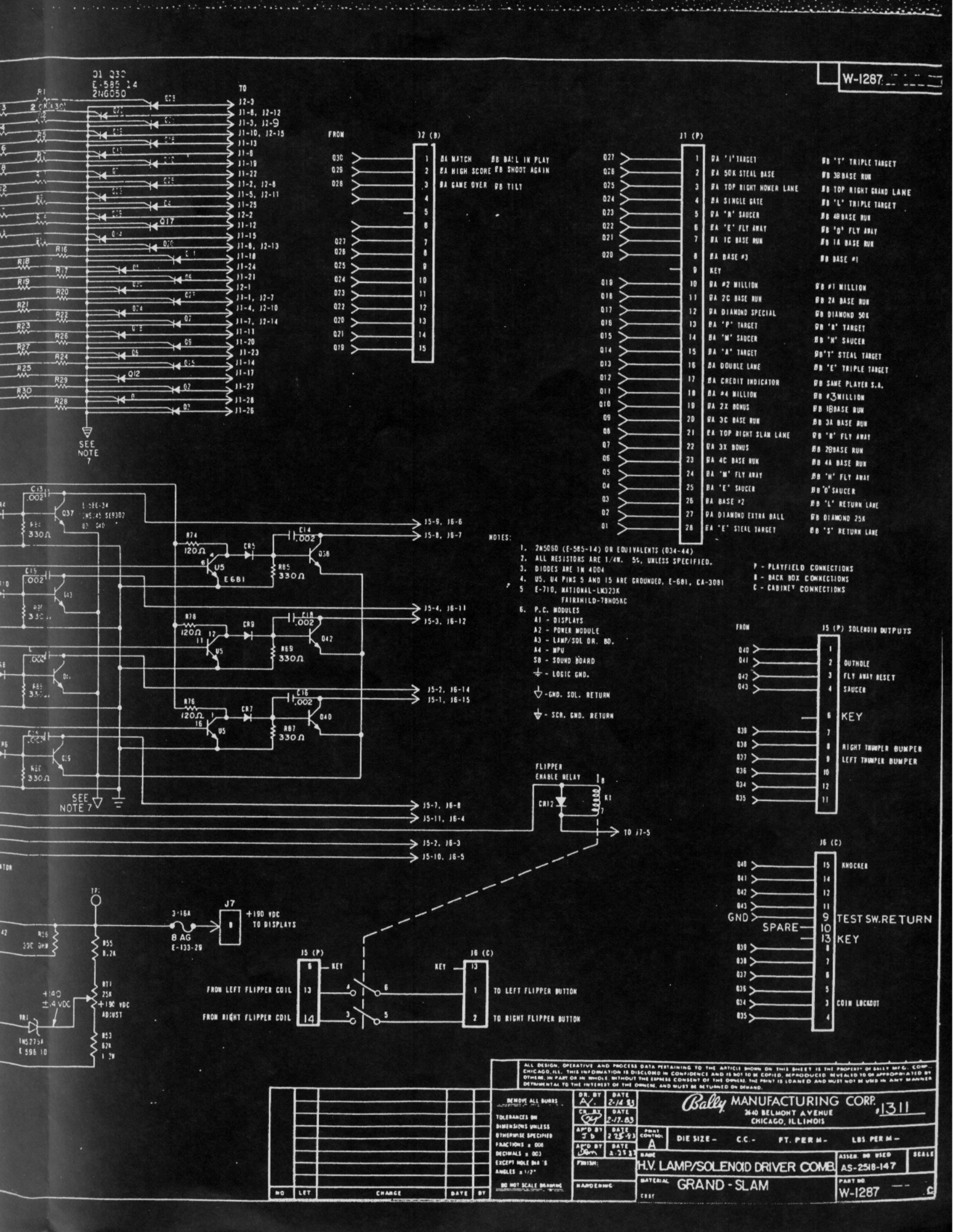

VECTOR DRAWING FOR
GRAND SLAM EJECT SAUCER

SAUCER BALL TO EJECT, OUT
AS SHOWN BY ARROW




| OPER. | DEPT. | DESCRIPTION | TOOL No. |
|---|---|---|---|

W-1287

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| NO | LET | CHANGE | DATE | BY |
|---|---|---|---|---|

REMOVE ALL BURRS
TOLERANCES ON DIMENSIONS UNLESS OTHERWISE SPECIFIED
FRACTIONS ± .008
DECIMALS ± .003
EXCEPT HOLE DIA'S
ANGLES ± 1/2°
DO NOT SCALE DRAWING

DR. BY A.V. DATE 2-14-83
CH. BY DATE 2-17-83
APP'D BY J.D. DATE 2-25-83
APP'D BY DATE 2-25-83
FINISH:
HARDENING

Bally MANUFACTURING CORP. #1311
2640 BELMONT AVENUE
CHICAGO, ILLINOIS

PRINT CONTROL A
DIE SIZE - C.C. - FT. PER M - LBS PER M -

NAME H.V. LAMP/SOLENOID DRIVER COMB.
ASSEM. NO USED AS-2518-147
SCALE
MATERIAL GRAND - SLAM
PART NO W-1287 C

# A1 INSERT

NOTE ON 4 PLAYER ONLY

| 12 PIN PLUG | | |
|---|---|---|
| FROM | PIN | WIRE |
| A2J4-8 | 1 | 10 |
| A2J4-1 | 2 | 50 |
| A3J2-2 | 3 | 18 |
| A3J1-18 | 4 | 35 |
| A2J4-4 | 5 | 40 |
| A3J2-1 | 6 | 31 |
| A2J4-9 | 7 | 70 |
| A2J4-7 | 8 | 90 |
| A3J2-3 | 9 | 61 |
| A2J3-11 | 10 | 20 |
| A3J1-10 | 11 | 97 |
| | 12 | |

INSERT TO BACK CAB.

| TO | (PLAYER 1) 1A1 J1 | (PLAYER 2) 2A1 J1 | (PLAYER 3) 3A1 (OPTIONAL) J1 | (PLAYER 4) 4A1 (OPTIONAL) J1 | CREDIT DISPLAY 5A1 J1 | RUNS DISPLAY 6A1 J1 |
|---|---|---|---|---|---|---|
| 10 — A3J7-8 | 1 | 1 | 1 | 1 | 1 | 1 |
| N/U | 2 | 2 | 2 | 2 | 2 | 2 |
| N/U | 3 | 3 | 3 | 3 | 3 | 3 |
| 80 — A4J1-1 | 4 | 4 | 4 | 4 | 4 | 4 |
| 20 — A4J1-2 | 5 | 5 | 5 | 5 | 5 | 5 |
| 30 — A4J1-3 | 6 | 6 | 6 | 6 | 6 | 6 |
| 40 — A4J1-4 | 7 | 7 | 7 | 7 | 7 | 7 |
| 50 — A4J1-5 | 8 | 8 | 8 | 8 | 8 | 8 |
| 58 — A4J1-6 | 9 | 9 | 9 | 9 | 9 | 9 |
| 70 — A4J1-10 | 10 | 10 | 10 | 10 | 10 | 10 |
| N/U | 11 | 11 | 11 | 11 | 11 | 11 |
| 84 — A4J1-7 | 12 | 12 | 12 | 12 | 12 | 12 |
| 60 — A3J7-20 | 13 | 13 | 13 | 13 | 13 | 13 |
| KEY | 14 | 14 | 14 | 14 | KEY | 14 |
| 85 — A4J1-20 | 15 | 31 | 72 | 67 | 18 | 83 |
| 54 — A4J1-28 | 16 | 16 | 16 | 16 | 16 | 16 |
| 38 — A4J1-27 | 17 | 17 | 17 | 17 | 17 | 17 |
| 25 — A4J1-26 | 18 | 18 | 18 | 18 | 18 | 18 |
| 51 — A4J1-25 | 19 | 19 | 19 | 19 | 19 | 19 |
| 45 — A3J7-17 | 20 | 20 | 20 | 20 | 20 | 20 |
| | | A4J1-21 | A4J1-22 | A4J1-23 | A4J1-24 | A4J4-8 |

61 — A3J2-3
97 — A3J1-10
18 — A3J2-2
31 — A3J2-1
35 — A3J1-18
90 — A2J4-7
20 — A2J3-11

## LAMP DRIVER P/O A3 (I)

J2

| | | TO | |
|---|---|---|---|
| 31 | 1 | 0A MATCH | 03 BALL IN PLAY |
| 18 | 2 | 0A HIGH SCORE | 0B SHOOT AGAIN |
| 61 | 3 | 0A GAME OVER | 0B TILT |
| | 4 | | |
| | 5 | KEY | |
| | 6 | | |
| | 7 | | |
| | 8 | | |
| | 9 | | |
| | 10 | | |
| | 11 | | |
| | 12 | | |
| | 13 | | |
| | 14 | | |
| | 15 | | |

J3

| | | |
|---|---|---|
| 83 | 1 | A2J3-2 |
| | 2 | |
| 83 | 3 | A2J3-3 |

J1

| | | | |
|---|---|---|---|
| 43 | 1 | 0A "I" TARGET | 0B "T" TRIPLE TARGET |
| 64 | 2 | 0A 50K STEAL BASE | 0B 3BBASE RUN |
| 81 | 3 | 0A TOP RIGHT HOMER LANE | 0B TOP RIGHT GRAND LANE |
| 50 | 4 | 0A SINGLE GATE | 0B "L" TRIPLE TARGET |
| 14 | 5 | 0A "R" SAUCER | 0B 4BBASE RUN |
| 72 | 6 | 0A "E" FLYAWAY | 0B "O" FLYAWAY |
| 67 | 7 | 0A 1C BASE RUN | 0B 1A BASE RUN |
| 15 | 8 | 0A BASE #3 | 0B BASE #1 |
| | 9 | KEY | |
| 97 | 10 | 0A #2 MILLION | 0B #1 MILLION |
| 75 | 11 | 0A 2C BASE RUN | 0B 2A BASE RUN |
| 95 | 12 | 0A DIAMOND SPECIAL | 0B DIAMOND 50K |
| 91 | 13 | 0A "P" TARGET | 0B "R" TARGET |
| 13 | 14 | 0A "M" SAUCER | 0B "H" SAUCER |
| 83 | 15 | 0A "A" TARGET | 0B "T" STEAL TARGET |
| 32 | 16 | 0A DOUBLE LANE | 0B "E" TRIPLE TARGET |
| 47 | 17 | 0A CREDIT INDICATOR | 0B SAME PLAYER S.A. |
| 35 | 18 | 0A #4 MILLION | 0B #3MILLION |
| 45 | 19 | 0A 2X BONUS | 0B 1BBASE RUN |
| 85 | 20 | 0A 3C BASE RUN | 0B 3A BASE RUN |
| 25 | 21 | 0A TOP RIGHT SLAM LANE | 0B "R" FLYAWAY |
| 23 | 22 | 0A 3X BONUS | 0B 2BBASE RUN |
| 90 | 23 | 0A 4C BASE RUN | 0B 4A BASE RUN |
| 12 | 24 | 0A "M" FLYAWAY | 0B "H" FLYAWAY |
| 98 | 25 | 0A "E" SAUCER | 0B "O" SAUCER |
| 43 | 26 | 0A BASE #2 | 0B "L" RETURN LANE |
| 21 | 27 | 0A DIAMOND EXTRA BALL | 0B DIAMOND 25K |
| 27 | 28 | 0A "E" STEAL TARGET | 0B "S" RETURN LANE |

J4

| | | TO |
|---|---|---|
| 27 | 1 | A4J4-6 |
| | 2 | |
| 36 | 3 | A4J4-5 |
| 25 | 4 | A4J4-7 |
| 61 | 5 | A4J4-10 |
| 78 | 6 | A4J4-2 |
| 21 | 7 | A4J4-3 |
| 23 | 8 | A4J4-4 |
| | 9 | |
| | 10 | |
| | 11 | |
| | 12 | KEY |
| | 13 | |
| 63 | 14 | A4J1-18 |
| 53 | 15 | A4J1-19 |
| 48 | 16 | A4J1-12 |
| 45 | 17 | A4J1-13 |
| 13 | 18 | A4J1-14 |
| 32 | 19 | A4J1-15 |
| 75 | 20 | A4J1-11 |

## VOLTAGE REGULATOR/SOLENOID DR

J7

| | | TO |
|---|---|---|
| | 1 | |
| | 2 | KEY |
| 50 | 3 | A2J3-7 |
| | 4 | |
| 30 | 5 | A2J3-8 |
| 92 | 6 | A2J4-6 |
| | 7 | |
| 10 | 8 | A1J1-1 |
| | 9 | |
| 56 | 10 | A2J3-1 |
| 14 | 11 | A4J4-12 |
| 70 | 12 | A2J3-10 |
| 64 | 13 | A3J7-25 |
| 96 | 14 | A4J4-16 |
| 54 | 15 | A4J4-17 |
| 84 | 16 | A8J1-5 |
| 45 | 17 | A1J1-20 |
| 94 | 18 | A4J4-18 |
| 81 | 19 | A4J4-19 |
| 60 | 20 | A1J1-13 |
| 52 | 21 | A2J3-5 |
| 82 | 22 | A2J3-6 |
| 13 | 23 | A2J4-2 |
| 57 | 24 | A2J4-3 |
| 64 | 25 | A3J7-13 |

J6

| | | TO |
|---|---|---|
| 20 | 1 | LEFT FLIPPER SW. |
| 10 | 2 | RIGHT FLIPPER SW. |
| 36 | 3 | COIN LOCKOUT |
| | 4 | |
| | 5 | |
| | 6 | |
| | 7 | |
| | 8 | |
| 31 | 9 | TEST SW. RETURN |
| | 10 | |
| | 11 | |
| | 12 | |
| | 13 | KEY |
| | 14 | |
| 85 | 15 | KNOCKER |

TO LOWER CABINET TO PLAYFIELD

NOTES:
1. THESE PINS ARE RESERVED FOR FUTURE USE.
2. WIRE COLOR ARE SHOWN FOR ALL CONNECTOR PINS, SOME WIRE MAY NOT BE USED IN ALL GAMES.
3. * INDICATES AID TEST POINT.
4. ALL DIODES 1N4148 UNLESS OTHERWISE NOTED.

| WIRE COLOR CODE | |
|---|---|
| 1-RED | 6-BROWN |
| 2-BLUE | 7-ORANGE |
| 3-YELLOW | 8-BLACK |
| 4-GREEN | 9-GRAY |
| 5-WHITE | 0-NO TRA |

| OPER. | DEPT. | DESCRIPTION | TOOL No. |
|---|---|---|---|

L PART NO. W-1282-1

ØA GAME OVER
ØB TILT
ØA NO. 2 MILLION
ØB NO. 1 MILLION
ØA HIGH SCORE
ØB SHOOT AGAIN
ØA MATCH
ØB BALL IN PLAY
ØA NO. 4 MILLION
ØB NO. 3 MILLION

TO 5.9V.A.C.
A2J4-8
A2J4-9

10/70 GEN. ILL. LAMPS ( )

TO
A2J4-1
A2J4-4

50/40

J1

| | | |
|---|---|---|
| 23 | 1 | A4J4-4, A3J4-4 |
| 21 | 2 | A4J4-3, A3J4-3 |
| 78 | 3 | A4J4-2, A3J4-2 |
| 15 | 4 | A4J4-1 |
| 84 | 5 | A3J7-18 |
| 60 | 6 | A4J1-13, A3J7-20 |
| | 7 | |
| 61 | 8 | A4J4-10, A3J4-5 |
| | 9 | |
| 70 | 10 | A3J7-12 |
| | 11 | KEY |
| 80 | 12 | N/U |
| 80 | 13 | N/U |
| 80 | 14 | N/U |
| 13 | 15 | A3J7-23, A2J4-2 |

SOLID STATE SOUND SYSTEM MODULE A8

J2

| | |
|---|---|
| 1 | 2 |
| 70 | 80 |

| 24 PIN PLUG | | |
|---|---|---|
| FROM | PIN | WIRE |
| A3J7-8 | 1 | 10 |
| A4J1-2 | 2 | 20 |
| A4J1-26 | 3 | 25 |
| A4J1-3 | 4 | 30 |
| A4J1-27 | 5 | 38 |
| A4J1-4 | 6 | 40 |
| A3J7-17 | 7 | 45 |
| A4J1-5 | 8 | 50 |
| A4J1-25 | 9 | 51 |
| A4J1-28 | 10 | 54 |
| A4J1-6 | 11 | 58 |
| A3J7-20 | 12 | 60 |
| A4J1-23 | 13 | 67 |
| A4J1-10 | 14 | 70 |
| A4J1-22 | 15 | 72 |
| A4J1-1 | 16 | 80 |
| | 17 | |
| | 18 | |

ADAPTER FOR 3rd & 4th PLAYER

## LENOID DRIVER P/O A3 (I)

TO
LIPPER SW.
FLIPPER SW.
OCKOUT

W. RETURN

R

J5 TO

| | | |
|---|---|---|
| | 1 | |
| 85 | 2 | OUTHOLE |
| 83 | 3 | FLYAWAY RESET |
| 75 | 4 | SAUCER |
| | 5 | |
| | 6 | KEY |
| | 7 | |
| 74 | 8 | RIGHT THUMPER BUMPER |
| 71 | 9 | LEFT THUMPER BUMPER |
| | 10 | |
| | 11 | |
| | 12 | |
| 40 | 13 | |
| 70 | 14 | |
| | 15 | |

J5 — TEST CONNECTOR

| | |
|---|---|
| 1 | D7 |
| 2 | D6 |
| 3 | D5 |
| 4 | D4 |
| 5 | D3 |
| 6 | D2 |
| 7 | D1 |
| 8 | D0 |
| 9 | A13 |
| 10 | A12 |
| 11 | A11 |
| 12 | A10 |
| 13 | A9 |
| 14 | A8 |
| 15 | A7 |
| 16 | A6 |
| 17 | A5 |
| 18 | A4 |
| 19 | A3 |
| 20 | A2 |
| 21 | A1 |
| 22 | A0 |
| 23 | R/W |
| 24 | HLT |
| 25 | RES |
| 26 | VMA |
| 27 | Ø2 |
| 28 | EX. MEM. |
| 29 | KEY |
| 30 | 5 V.D.C. |
| 31 | GND. |
| 32 | A4J11-18 |

## MPU A4 (C)

J1 TO

| | | |
|---|---|---|
| 80 | 1 | A1J1-4 |
| 20 | 2 | A1J1-5 |
| 30 | 3 | A1J1-6 |
| 40 | 4 | A1J1-7 |
| 50 | 5 | A1J1-8 |
| 58 | 6 | A1J1-9 |
| | 7 | |
| | 8 | |
| | 9 | KEY |
| 70 | 10 | A1J1-10 |
| 75 | 11 | A3J4-20 |
| 18 | 12 | A3J4-16 |
| 15 | 13 | A3J4-17 |
| 13 | 14 | A3J4-18 |
| 32 | 15 | A3J4-19 |
| | 16 | |
| | 17 | |
| 53 | 18 | A3J4-14 |
| 53 | 19 | A3J4-15 |
| 85 | 20 | 1A1J1-15 |
| 31 | 21 | 2A1J1-15 |
| 72 | 22 | 3A1J1-15 |
| 67 | 23 | 4A1J1-15 |
| 18 | 24 | 5A1J1-15 |
| 51 | 25 | A1J1-19 |
| 25 | 26 | A1J1-18 |
| 38 | 27 | A1J1-17 |
| 54 | 28 | A1J1-16 |

J4 TO

| | | |
|---|---|---|
| 15 | 1 | A8J1 |
| 78 | 2 | A3J4-6/A8J1-3 |
| 21 | 3 | A3J4-7/A8J1-2 |
| 23 | 4 | A3J4-8/A8J1-1 |
| 36 | 5 | A3J4-3 |
| 27 | 6 | A3J4-1 |
| 25 | 7 | A3J4-4 |
| 83 | 8 | 6A1J1-15 |
| | 9 | |
| 61 | 10 | A3J4-5 A8J1-8 |
| | 11 | |
| 14 | 12 | A3J7-11 |
| | 13 | |
| | 14 | KEY |
| 90 | 15 | A2J3-9 |
| 96 | 16 | A3J7-14 |
| 54 | 17 | A3J7-15 |
| 94 | 18 | A3J7-18 |
| 81 | 19 | A3J7-19 |

J2 TO

| | | |
|---|---|---|
| 51 | 1 | ST0 |
| 70 | 2 | ST1 |
| 93 | 3 | ST2 |
| 53 | 4 | ST3 |
| 31 | 5 | ST4 |
| | 6 | KEY |
| | 7 | N/U |
| 54 | 8 | 10 |
| 63 | 9 | 11 |
| 57 | 10 | 12 |
| 78 | 11 | 13 |
| 60 | 12 | 14 |
| 55 | 13 | 15 |
| 65 | 14 | 16 |
| 52 | 15 | 17 |

PLAY FIELD SW. STROBE

PLAY FIELD SW. RETURN

J3 TO

| | | |
|---|---|---|
| 10 | 1 | SELF TEST SW. |
| 13 | 2 | ST 0 SW. CAB. |
| 14 | 3 | ST 1 STROBE |
| | 4 | KEY |
| | 5 | N/U |
| | 6 | N/U |
| | 7 | N/U |
| | 8 | N/U |
| | 9 | 10 |
| 15 | 10 | 11 |
| 65 | 11 | 12 |
| 20 | 12 | 13 |
| | 13 | 14 |
| | 14 | 15 |
| 25 | 15 | 16 |
| 27 | 16 | 17 |
| 30 | | |

CAB. SW. RET.

COLOR CODE
6-BROWN
7-ORANGE
8-BLACK
9-GRAY
0-NO TRACER

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| NO. | LET. | CHANGE | DATE | BY |
|---|---|---|---|---|
| | | | | |

REMOVE ALL BURRS
TOLERANCES ON DIMENSIONS UNLESS OTHERWISE SPECIFIED
FRACTIONS ± .008
DECIMALS ± .003
EXCEPT HOLE DIA'S
ANGLES ± 1/2°
DO NOT SCALE DRAWING

DR. BY AJ DATE 2-17-83
CHKD BY DATE 2-18-83
APP'D BY JD DATE 2-25-83
APP'D BY DATE 2-25-83
PRINT CONTROL A

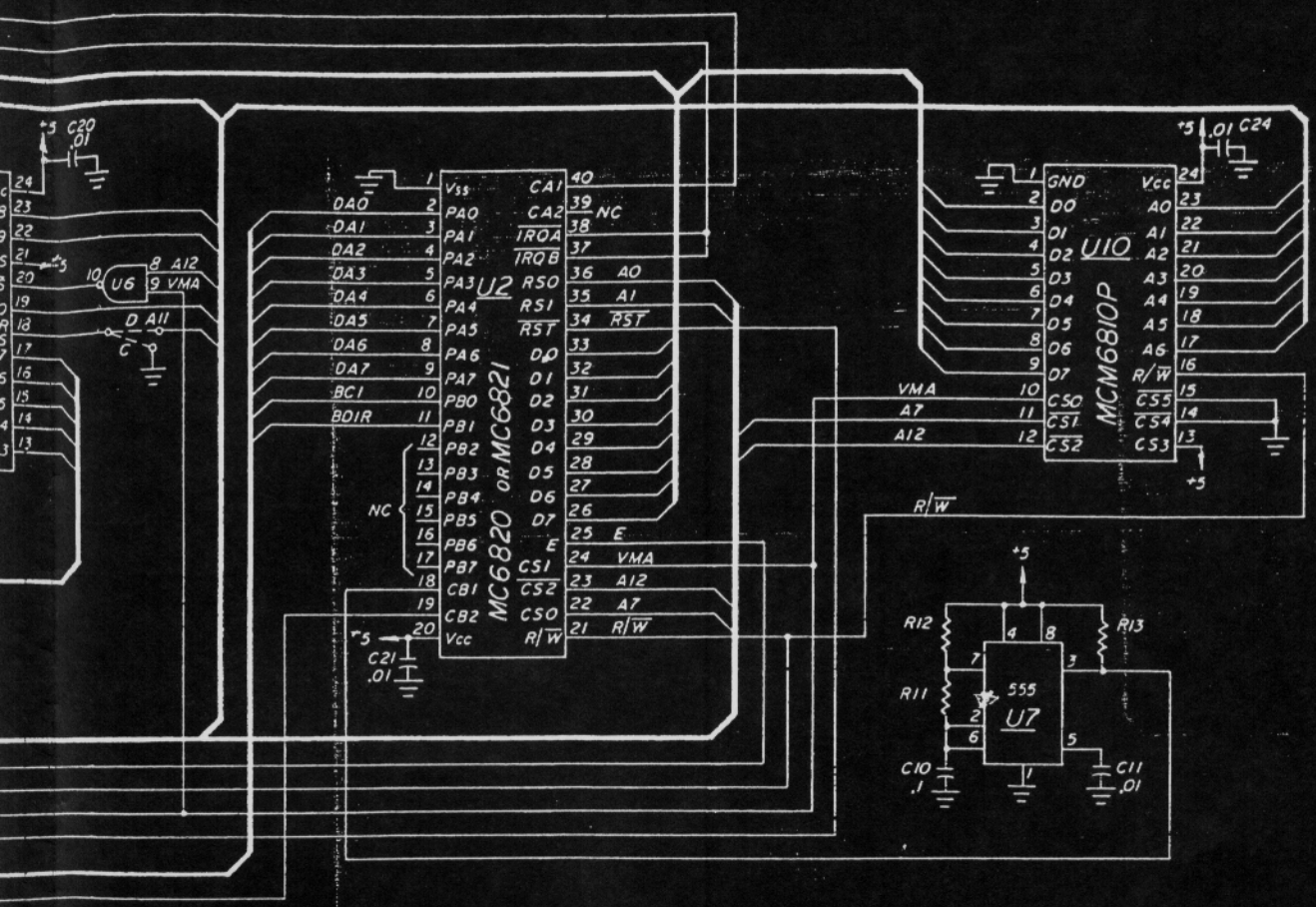
Bally MANUFACTURING CORP.
2640 BELMONT AVENUE
CHICAGO, ILLINOIS
# 1311

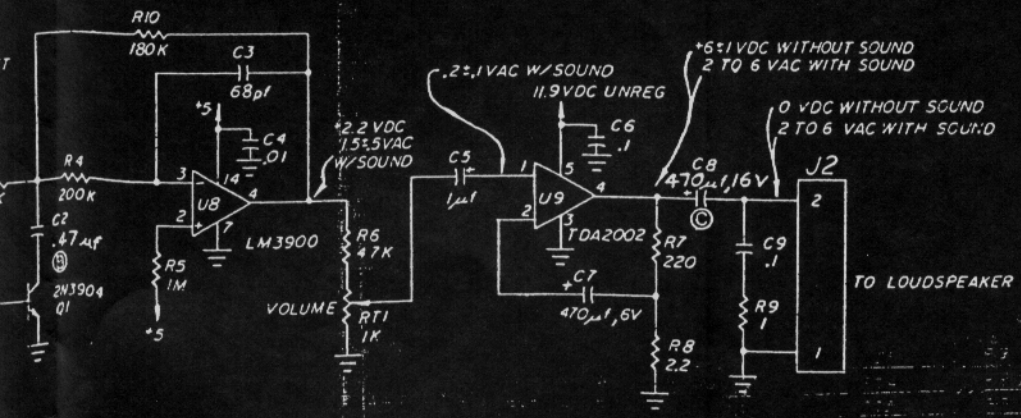
NAME WIRING DIAGRAM BACK BOX
ASSEM NO. USED
MATERIAL GRAND SLAM
CODE
PART NO. W-1282-1

NOTES:

1. USE JUMPER A IF INTERNAL RAM IS USED (680
2. " " B " EXTERNAL " " " (EPRO
3. " " C " 2K ROM (EPROM) " " " (GI 9
4. " " D " 4K " " " " (TI TM
5. U7, R12, R11, R13, C10, C11 NOT USED ON THIS ASSEMB
6. UNLESS OTHERWISE INDICATED, ALL RESISTOR VA
   ALL CAPACITOR VALUES ARE IN MMFD'S.
7. PREFIX ALL REFERENCE DESIGNATIONS WITH A0.
8. * INDICATES "AID" TEST POINT.

| OPER. | DEPT. | DESCRIPTION | TOOL NO. |
|---|---|---|---|




RAM IS USED (6802 WITHOUT U10).
" " " (6808/6810, U10).
OM) " " (GI 9316B INTEL 2716 OR EQUIV).
(TI TMS 2532 TMS 4732 OR EQUIV).
D ON THIS ASSEMBLY.
ALL RESISTOR VALUES ARE IN OHMS,
MMFD'S.
NATIONS WITH A8.

| NO. | LET. | CHANGE | DATE | BY |
|---|---|---|---|---|
| 3 | C | WAS 220uf 25V | 1-29-80 | JD |
| 2 | B | WAS .1 | 1-29-80 | JD |
| 1 | A | TEST INFO ADDED | 12-11-79 | MEW |

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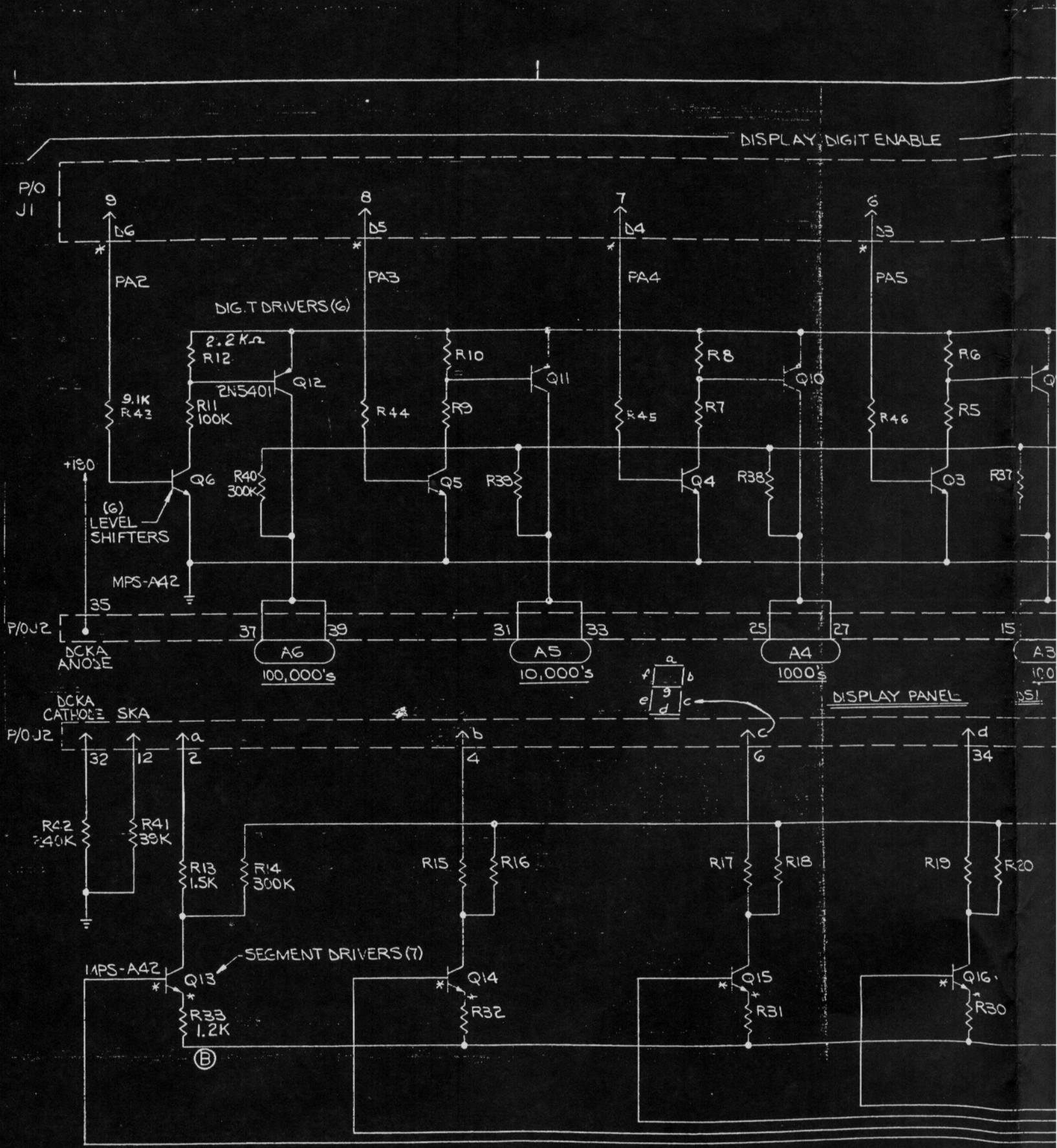
REMOVE ALL BURRS
TOLERANCES ON DIMENSIONS UNLESS OTHERWISE SPECIFIED
FRACTIONS ± 1/64
DECIMALS ± .003
EXCEPT HOLE DIA ±
ANGLES ± 1/2°
DO NOT SCALE DRAWING

DR. BY NRW DATE 9-13-79
CK. BY DATE 9-19-79
AP'D BY DATE 9-19-79
DATE 9/24/79
FINISH:
HARDENING:

Bally MANUFACTURING CORP.
2640 BELMONT AVENUE
CHICAGO, ILLINOIS
1173

PRINT CONTROL | DIE SIZE: | C.C.: | FT. PER M: | LBS. PER M:

NAME COMPUTER SOUND MODULE A8 SCHEMATIC
ASSEM. NO. USED AS-2518-51
SCALE NONE
MATERIAL
CODE
PART NO. W-1211 C




NOTES:

1. UNLESS OTHERWISE SPECIFIED ALL RESISTORS ARE ± 5%, 1/4W.
2. PREFIX ALL REFERENCE DESIG. WITH ASSEMBLY REFERENCE DESIG. "A1"
3. * INDICATES 'A1D' TEST POINT.

G PART NO. W-1184-




DIE SIZE — C.C. — FT. PER M — LBS. PER M —

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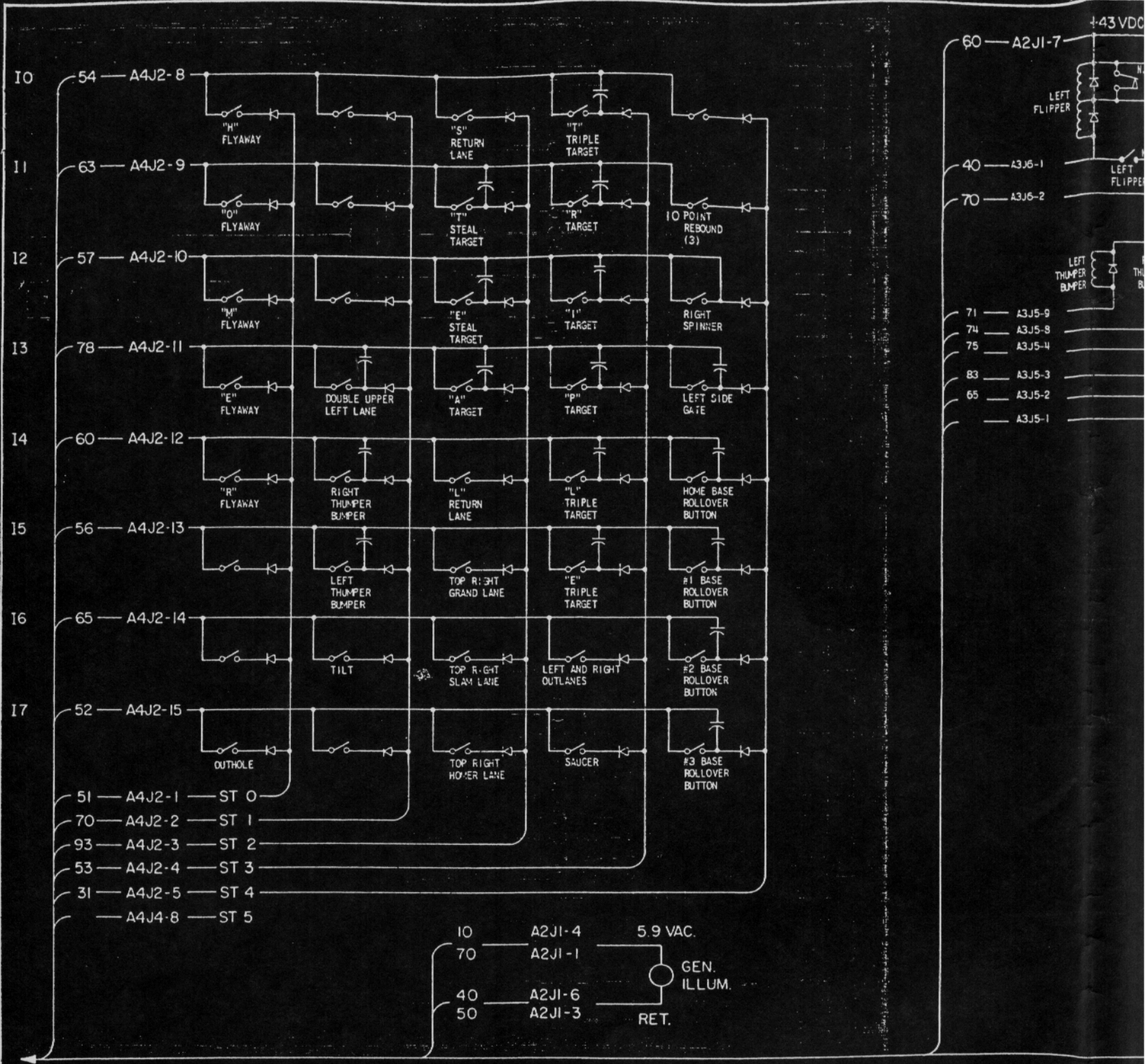
REMOVE ALL BURRS

TOLERANCES ON DIMENSIONS UNLESS OTHERWISE SPECIFIED FRACTIONS ±

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DR. BY | DATE | Bally MANUFACTURING CORP. 1120 | | | | | | | | | | | | | | | | | |
| CK. BY | DATE | 2640 BELMONT AVENUE CHICAGO, ILLINOIS | | | | | | | | | | | | | | | | | |
| APP'D BY | DATE | PRINT CONTROL → | | | | | | | | | | | | | | | TOTAL | SCALE | |
| APP'D BY | DATE | NAME | | | | | | | | | | | | | | | | ASSY NO. USED ON | |

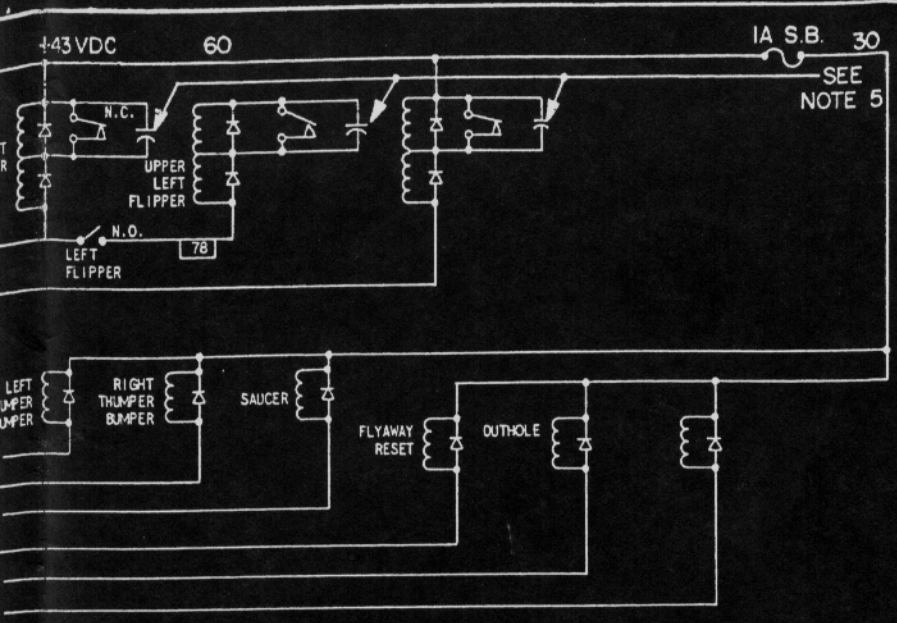
3 C WAS VEC

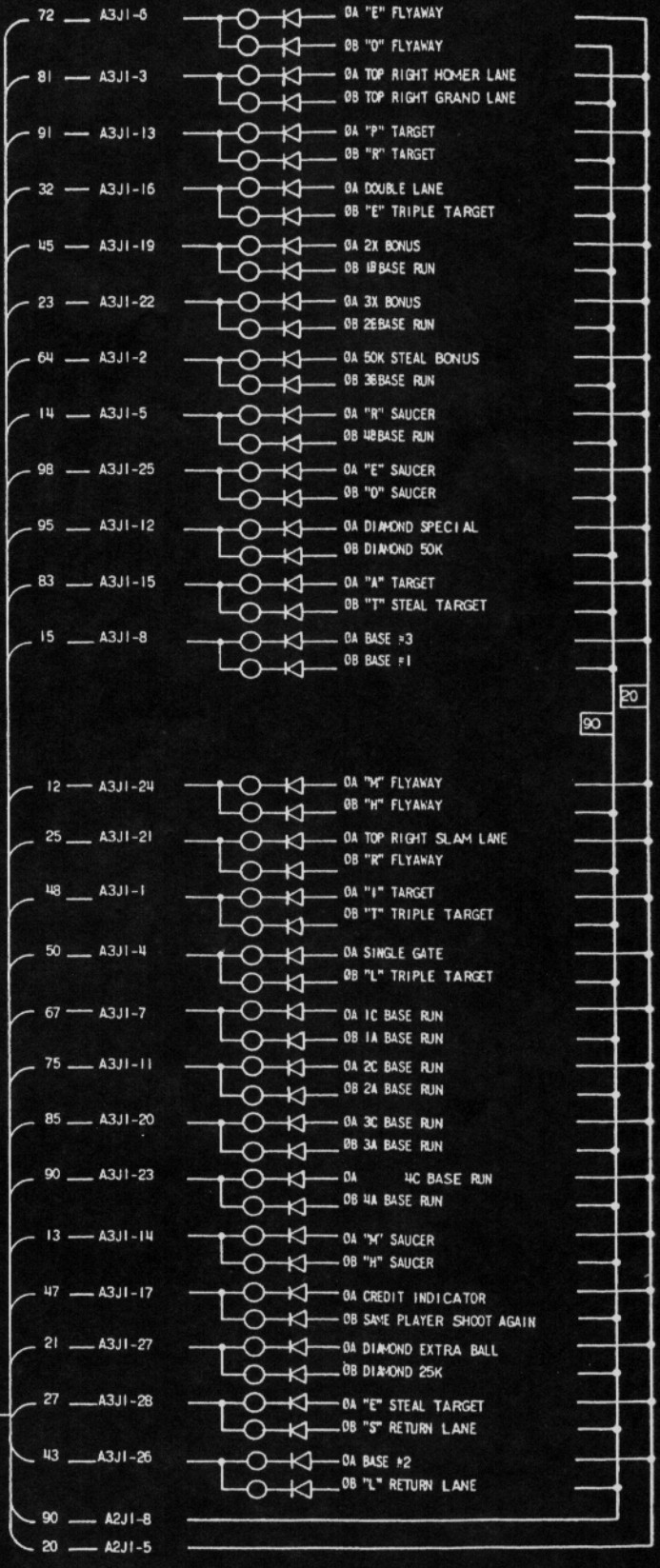



PLAYFIELD A6

NOTES

1. INDICATES NOT USED
2. N/U = NOT USED ON PLAYFIELD
3. * INDICATES AID TEST POINT
4. COIL DIODES ARE IN4004 (E-587-6) SWITCH DIODES ARE IN4148 (E-587-14)
   ALL CAPACITORS ARE .05 MFD. (E-586-80)
5. GERMANY ONLY - CAPACITOR .01 MFD. @ 500 V. (E-586-65)

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REMOVE ALL BURRS
TOLERANCES ON DIMENSIONS UNLESS OTHERWISE SPECIFIED
FRACTIONS ±
DECIMALS ± .
EXCEPT HOLE DIA'S
ANGLES ±

DR BY A. DATE 2-6-13
CHK'D BY DATE 2-7-13
APP'D BY JD DATE 2-25-13
APP'D BY DATE 2-25-13

Bally MANUFACTURING CORP.
3640 BELMONT AVENUE
CHICAGO, ILLINOIS
#1311

PART CONTROL A

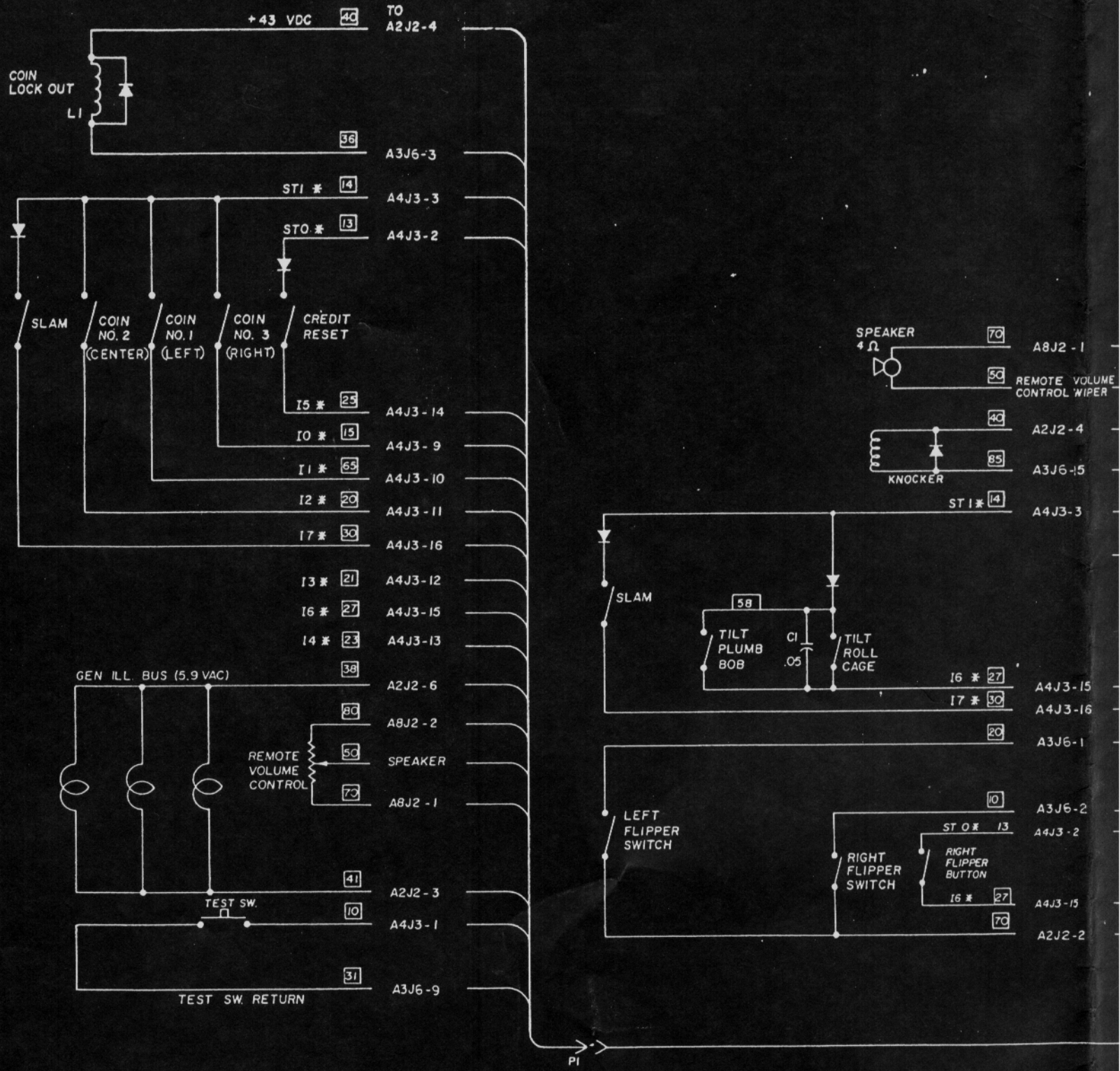
NAME WIRING DIAGRAM PLAYFIELD

USED ON

SIZE A

MATERIAL

PART NO




NOTES: (CAUTION)

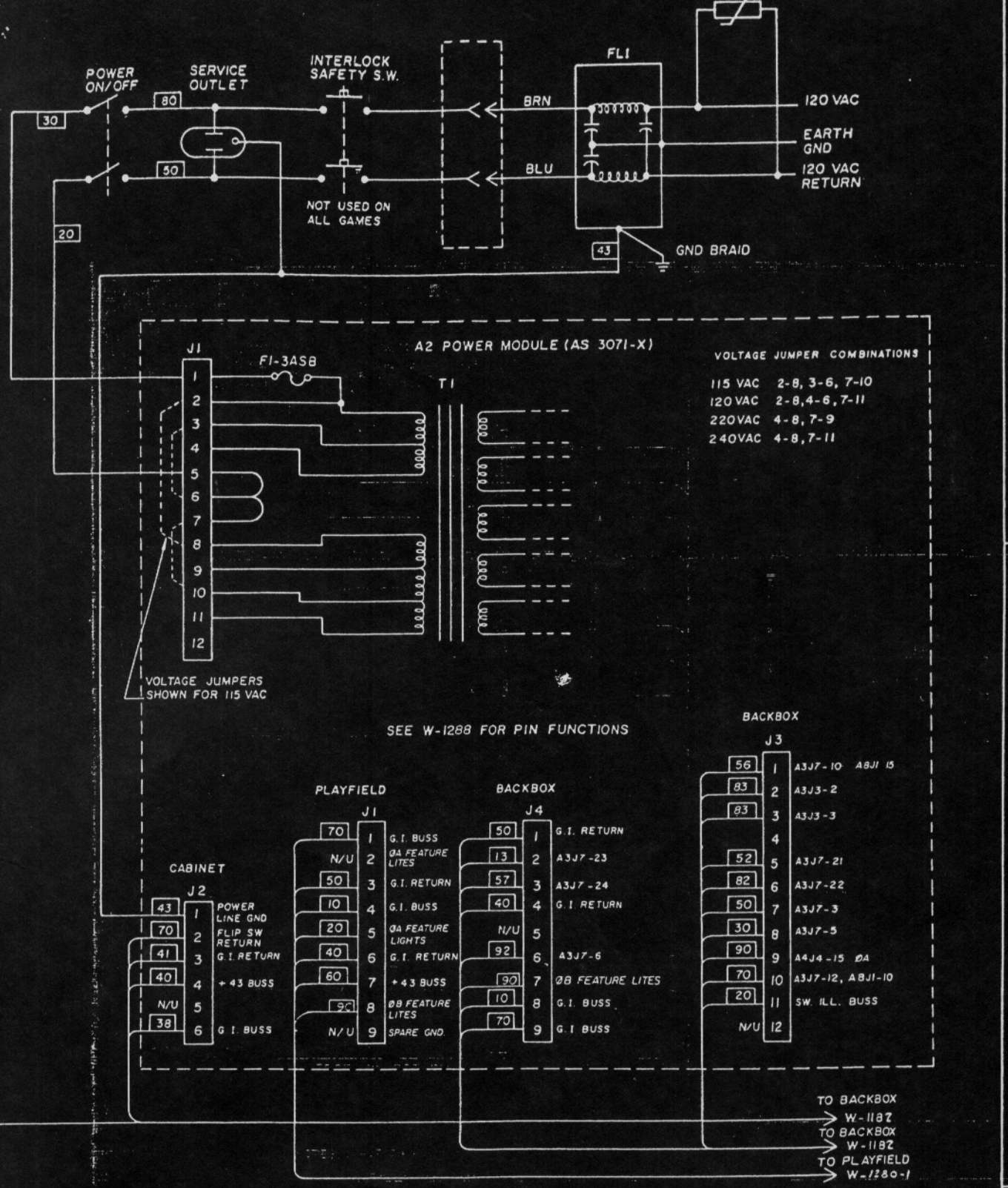
1. USE BALLY PART NO. E-713 FOR 115-120 VAC.
2. USE BALLY PART NO. E-713-1 FOR 220-240 VAC.
3. * INDICATES AID TEST POINT.

| TO | J1 PIN | TO | J1 PIN |
|---|---|---|---|
| A4J3-9 | 1 | A4J3-3 | 11 |
| A4J3-10 | 2 | A2J2-4 | 15 |
| A4J3-11 | 3 | A3J6-3 | 16 |
| A4J3-12 | 4 | A2J2-6 | 17 |
| A4J3-13 | 5 | A2J2-3 | 18 |
| A4J3-14 | 6 | A4J3-1 | 19 |
| A4J3-15 | 7 | A3J6-9 | 20 |
| A4J3-16 | 8 | SPEAKER | 9 |
| A4J3-2 | 10 | A8J2-1 | 12 |
| DOOR PLUG | | A8J2-2 | 13 |

A7 CABINET ASS'Y. WIRING

NOTE: DIODES ARE IN4004, (E-587-6)

| PER | DEPT | DESCRIPTION | TOOL NO |
|---|---|---|---|

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| NO | LET | CHANGE | DATE | BY |
|---|---|---|---|---|

REMOVE ALL BURRS
TOLERANCES ON DIMENSIONS UNLESS OTHERWISE SPECIFIED FRACTIONS ± DEC PLACES ± EXCEPT HOLE DIA ± ANGLES ±
DO NOT SCALE DRAWING
FINISH
HARDEN NO

| | | |
|---|---|---|
| DR BY A. | DATE 2-2-83 | |
| CK BY | DATE 2-16-83 | |
| APP'D BY J D | DATE 2-17-83 | |
| APP'D BY | DATE 2-21-83 | |

Bally MANUFACTURING CORP.
2640 BELMONT AVENUE
CHICAGO ILLINOIS
#1311

PRINT CONTROL A

NAME WIRING DIAGRAM - CABINET
ASSEM NO USED
SCALE
MATERIAL GRAND SLAM
PART NO W-1186-25 c

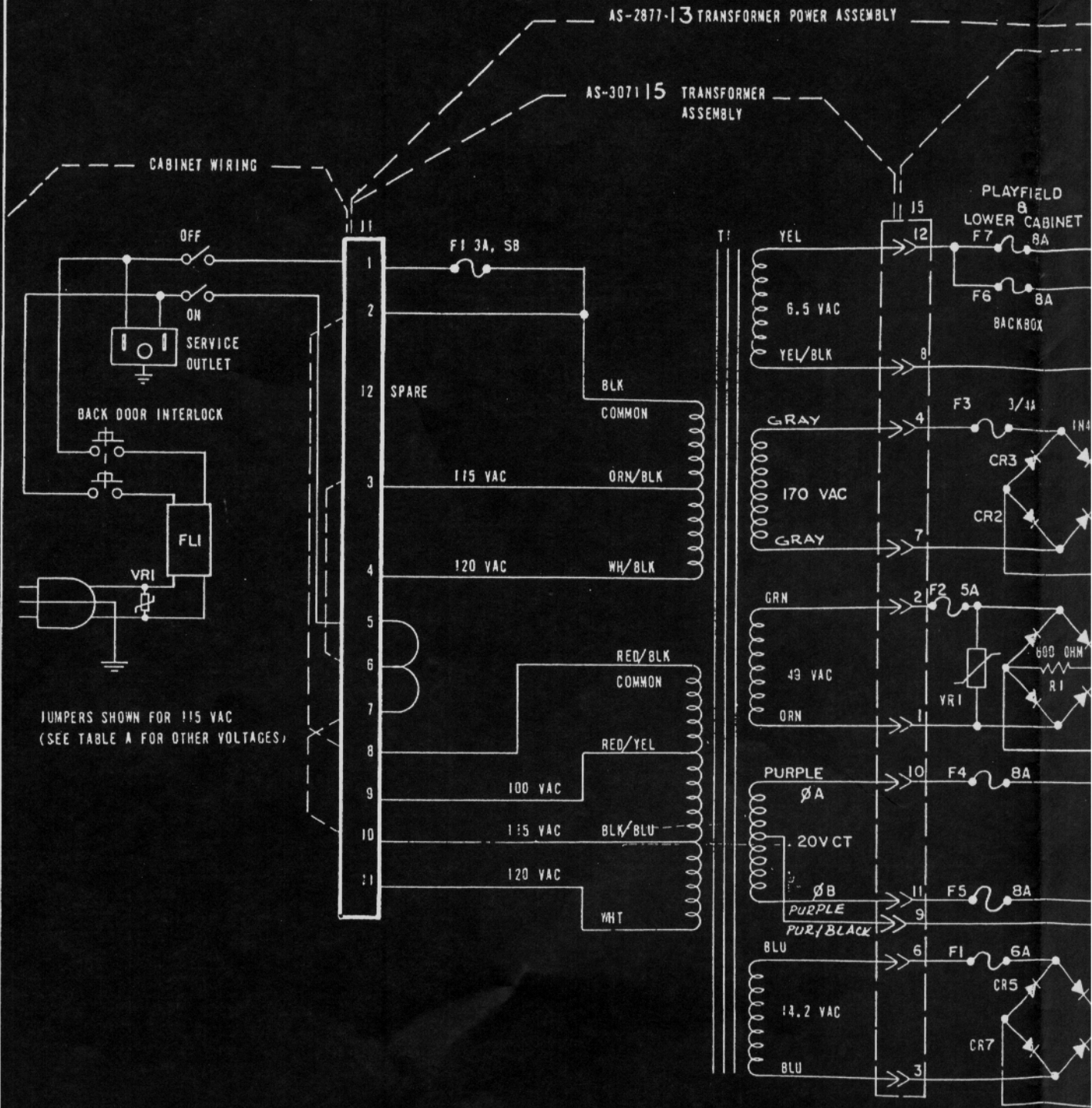


TABLE 'A'

| |
|---|
| 115 VAC, 2-8, 3-6, 7-10. |
| 120 VAC, 2-8, 4-6, 7-11 |
| 220 VAC, 4-8, 7-9 |
| 240 VAC, 4-8, 7-11 |

| OPER. | DEPT. | DESCRIPTION | TOOL NO. |
|---|---|---|---|

| NO. | LET. | CHANGE |
|---|---|---|

G PART NO. W-1288 b

AS-2518-151 POWER MODULE

AYFIELD
8
R CABINET
8A

8A

ACKBOX

3/4A

IN4004 (4)

CR4

CR1

R3

TP1 +230 VDC (UNREG. 190)

R2
100K

SOL. BUSS
TP4 +43 VDC.

600 OHM
R1

BR1

TP3
ØA FEATURE LIGHTS

8A

TP2
ØB FEATURE LIGHTS

8A

6A

CR6

CR8

TP5 11.5 VDC (UNREG, +5)

J3 (BACK BOX)

| | |
|---|---|
| 1 | 5V FILTER RETURN |
| 2 | SW. LAMP RETURN |
| 3 | SW. LAMP RETURN |
| 4 | SW. LAMP RETURN |
| 5 | 5V REGULATOR RETURN |
| 6 | 190 REGULATOR RETURN |
| 7 | 190 FILTER RETURN |
| 8 | FLIPPER RELAY, +43 |
| 9 | ØA TO MPU |
| 10 | +5V REGULATOR INPUT |
| 11 | ØA - FEATURE LIGHTS |
| 12 | SOLENOID BUS +43 |

J4 (BACK BOX)

| | |
|---|---|
| 1 | GEN. ILL RETURN |
| 2 | SOLENOID BUS RETURN |
| 3 | SOLENOID BUS RETURN |
| 4 | GEN. ILL. RETURN |
| 5 | SPARE |
| 6 | 190 REGULATOR INPUT |
| 7 | ØB - FEATURE LIGHTS |
| 8 | GEN. ILL. BUS |
| 9 | GEN. ILL. BUS |

J2 (LOWER CABINET)

| | |
|---|---|
| 1 | POWER LINE GND |
| 2 | FLIP SW. RETURN |
| 3 | GEN. ILL. RETURN |
| 4 | SOLENOID BUS, +43 |
| 5 | SPARE |
| 6 | GEN. ILL. BUS |

J1 (PLAYFIELD)

| | |
|---|---|
| 1 | GEN. ILL. BUS |
| 2 | ØA FEATURE LIGHTS |
| 3 | GEN. ILL. RETURN |
| 4 | GEN. ILL. BUS |
| 5 | ØA FEATURE LIGHTS |
| 6 | GEN. ILL. RETURN |
| 7 | SOLENOID BUS, +43 |
| 8 | ØB FEATURE LIGHTS |
| 9 | SPARE GND |

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| DATE | BY |
|---|---|
| | |

REMOVE ALL BURRS

TOLERANCES ON DIMENSIONS UNLESS OTHERWISE SPECIFIED
FRACTIONS ± 008
DECIMALS ± 003
EXCEPT HOLE DIA 'S
ANGLES ± 1/2°

DO NOT SCALE DRAWING

| | | |
|---|---|---|
| DR. BY J.J.G. | DATE 2-2-83 | |
| CK. BY | DATE | |
| AP'D BY | DATE | |
| AP'D BY | DATE 2-4-83 | |

Bally MANUFACTURING CORP.
2640 BELMONT AVENUE
CHICAGO, ILLINOIS
# 1311

PRINT CONTROL A

NAME: POWER SUPPLY SCHEMATIC

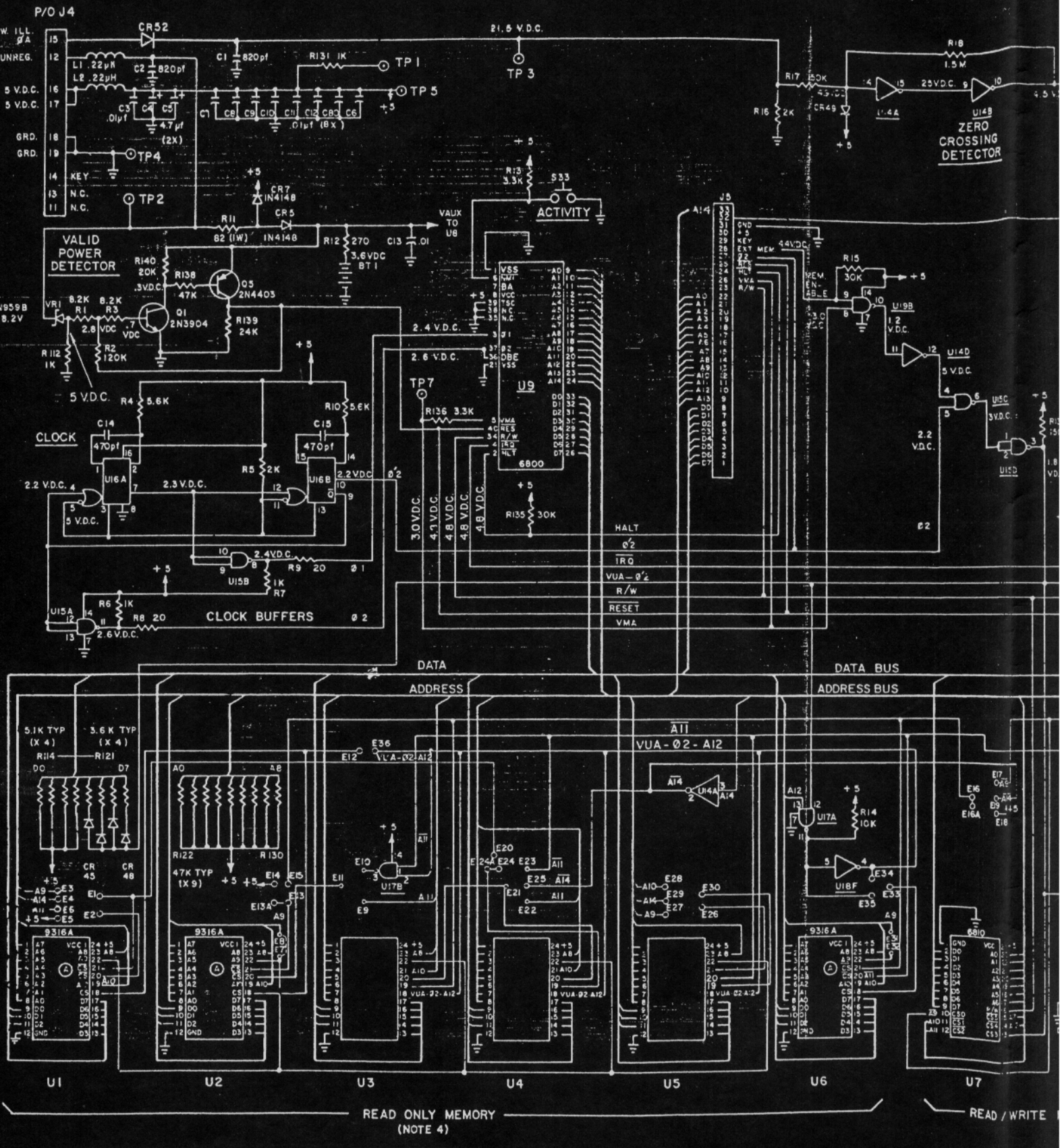
ASSEM. NO. USED: AS-2518-151

SCALE: NONE

MATERIAL: GRAND SLAM

CODE

PART NO. W-1288 b




## NOTES

1. * INDICATES "AID" TEST POINT.
2. REMOVE A3J4 BEFORE USING AS AID TEST POINT, MAYBE USED FOR 6TH AND 7TH DISPLAYS
3. PREFIX ALL REFERENCE DESIGNATIONS WITH "A4"
4. EXACT CHIP COMPLEMENT USED IN SOCKETS U1 THRU U6 CAN VARY FOR DIFFERENT GAMES AND PRODUCTION LOTS. TABLES OF MEMORY CHIPS AND CORRESPONDING JUMPERS FOR DIFFERENT GAMES AVAILABLE FROM BALLY FIELD SERVICE DEPARTMENT.

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REMOVE ALL BURRS

TOLERANCES ON DIMENSIONS UNLESS OTHERWISE SPECIFIED FRACTIONS ± 1/64 DECIMALS ± .005 ANGLES ± 1°

| | | |
|---|---|---|
| DR BY | DATE | |
| CK. BY | DATE | |
| APP'D BY | DATE | |
| APP'D BY | DATE | |
| FINISH | | |

Bally MANUFACTURING CORP.
2640 BELMONT AVENUE
CHICAGO, ILLINOIS

TOTAL

NAME M.P.U. CONTROL BOARD SCHEMATIC

ASSEM. NO. [illegible]