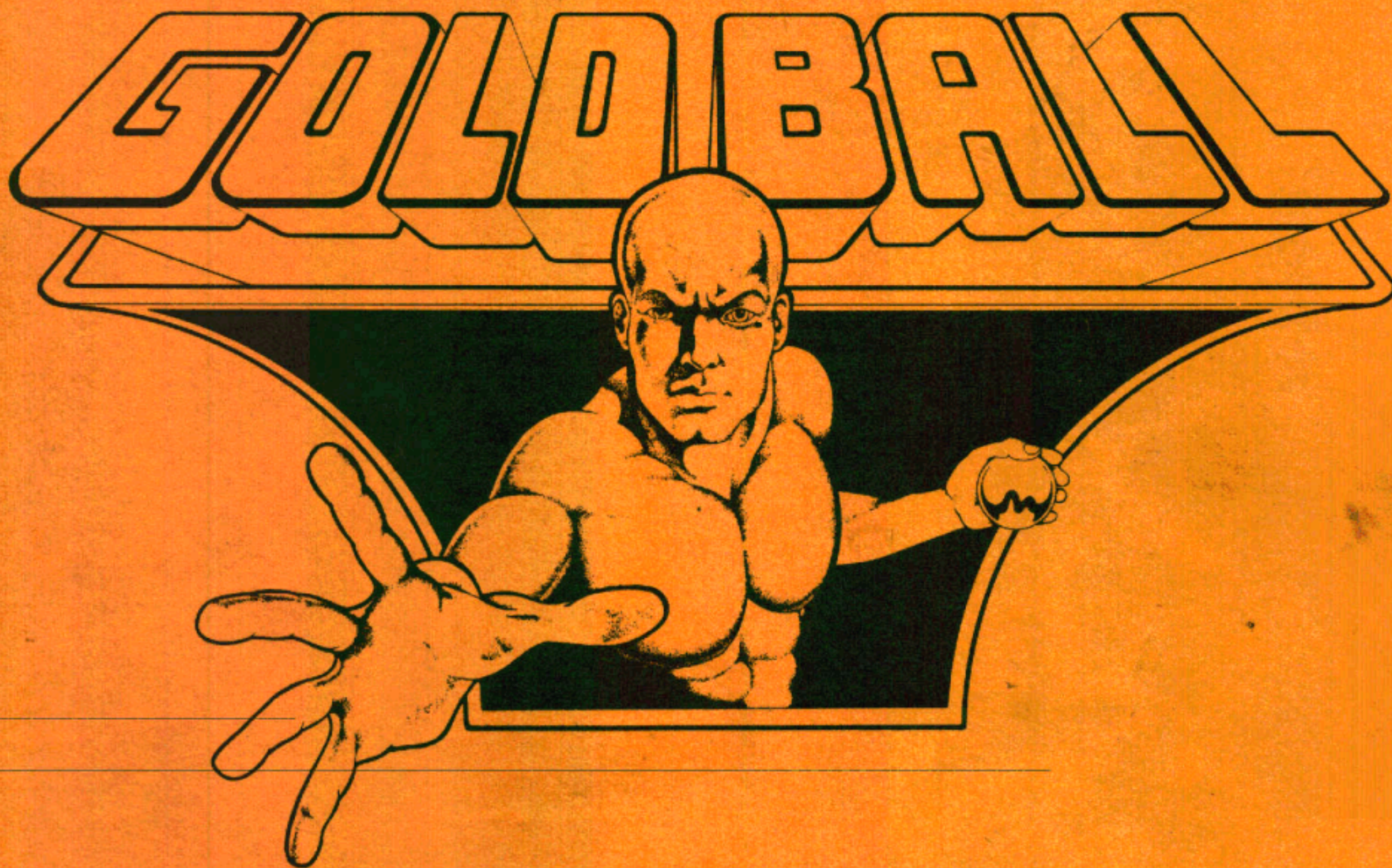


GAME No. 0371
Form No. 0371-00300-0000

Bally **MIDWAY**



Bally **MIDWAY** MFG. CO.

10601 W Belmont Ave • Franklin Park, Illinois 60131
Telephone (312) 451-9200



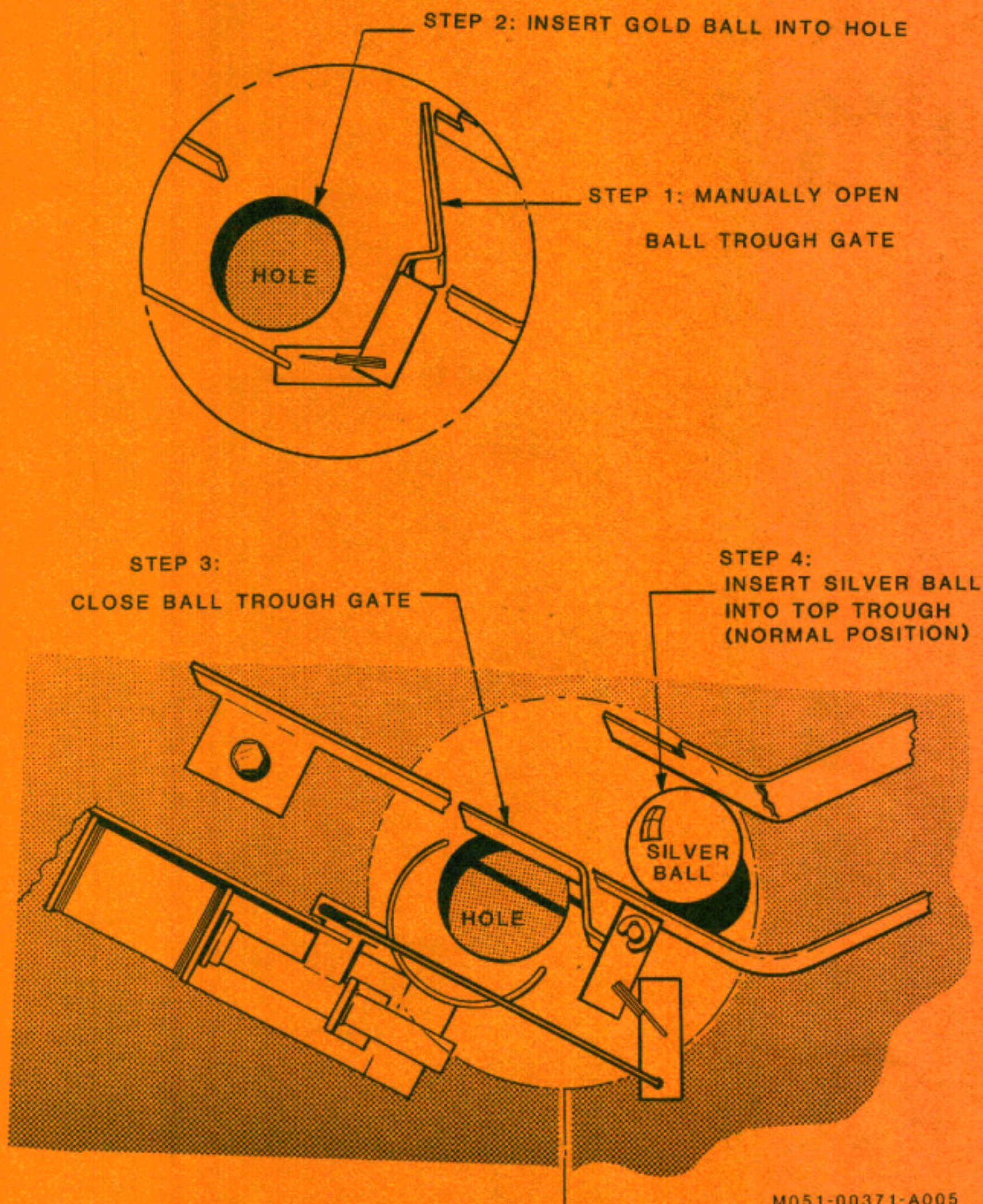
 FLIPPERSPILL.COM

I M P O R T A N T

IN ORDER FOR GAME TO OPERATE, GOLD BALL MUST BE INSERTED INTO LOWER BALL HOUSING AS FOLLOWS:

- 1) MANUALLY OPEN BALL TROUGH GATE
- 2) INSERT GOLD BALL INTO HOLE
- 3) CLOSE BALL TROUGH GATE
- 4) INSERT SILVER BALL IN TOP TROUGH (NORMAL POSITION)

NOTE:- GAME WILL NOT RESET IF GOLD BALL IS NOT SEATED IN LOWER BALL HOUSING.

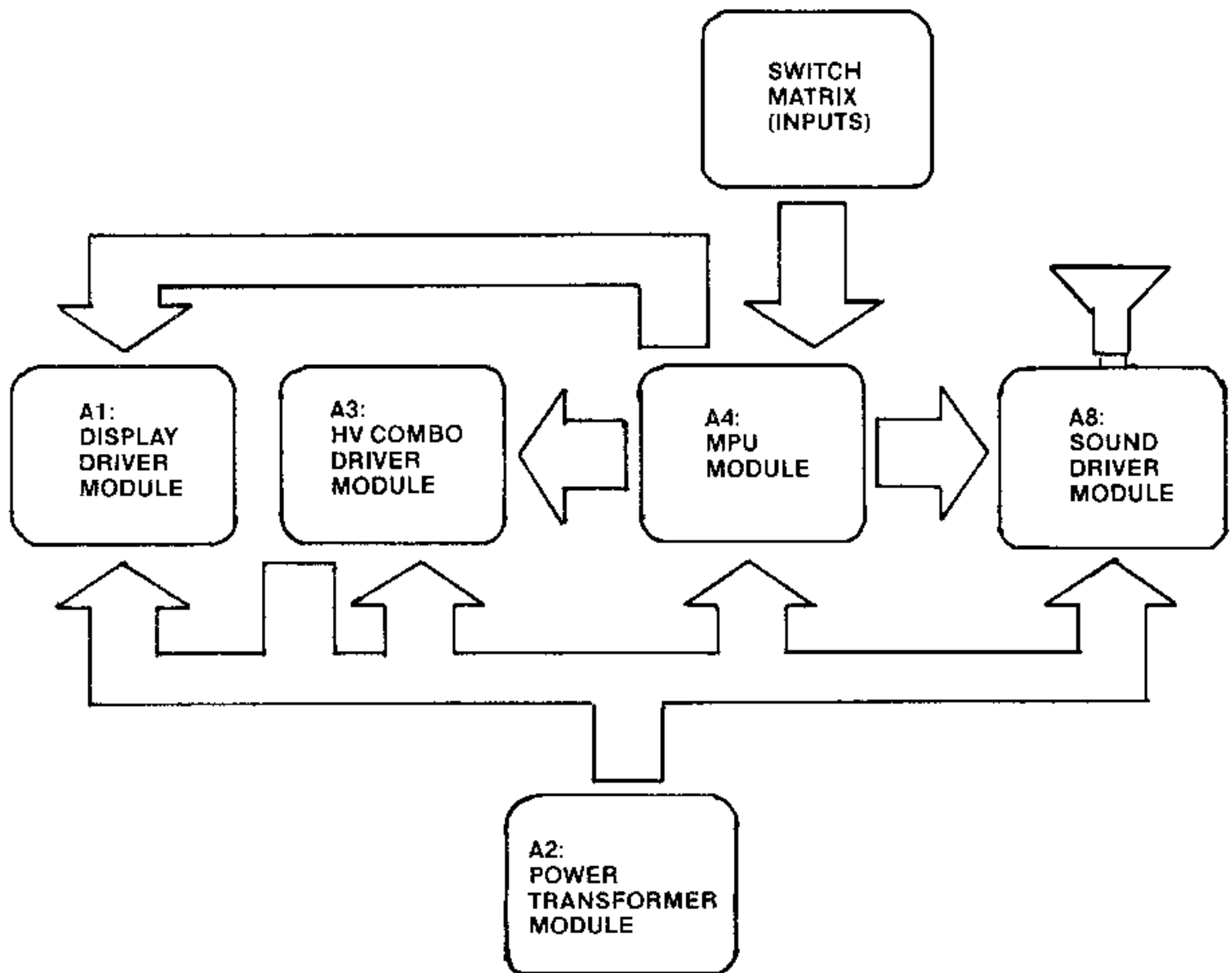


Installation and General Game Operation Instructions

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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 10,000,000 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— 10000 to—99999 = Total Plays (Paid & 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.

GOLD BALL #0371

Feature & Operation

TOP 4 LANES: (P-L-A-Y)

Liting play 1st time, scores 50,000 points.

Liting play 2nd time scores X-Ball.

Liting play 3rd time scores Special (1 replay).

Liting play 4th time scores 50K and so on.

P-L-A-Y lites are on lane change feature thru R. flipper cabinet button.

NOTE: On 3 or 5 ball if the X-ball has been made, special lite would be recalled for playing the X-Ball (if the SPL was not achieved on the same ball that X-Ball was made). However on next ball top lane will reset to 50K whether SPL was made or not.

TOP ROLLOVER BUTTON:

Lites to score SPL (Replay) only when Gold Ball is plunged to the shooter lane. However, if any point is scored prior to making the rollover button, player will not be qualified for SPL and the rollover SPL lite will go off. (One skill shot off of the plunger per Gold Ball.)

TOP RIGHT SIDE 1-2 & 3 TARGETS:

Making 1-2-3 targets 1st time 2X bonus lites.

Making 1-2-3 targets 2nd time 3X bonus lites.

Making 1-2-3 targets 3rd time 100,000 points is awarded.

Making 1-2-3 targets 4th time 1 replay is awarded.

Making 1-2-3 targets 5th and each additional time awards 100,000 points. (No recall on any above values).

Left Spinner always scores 1000 points and Adv. center arrow lite.

Bumpers score 100 points each, all the time.

RIGHT CENTER ROLLOVER BUTTON:

Advances bonus, spots center target Gold Ball lites, and scores 5000 points.

CENTER TARGET:

When hit spots the letter advances bonus, scores 5000 and the arrow steps over. 1st time Gold Ball completed 100,000 points are awarded, 2nd time 200,000, 3rd time SPL, 4th and each additional time 200,000 points. Maximum bonus build up 90,000 pts. collectable @ the outhole. Recall or no Recall on bonus values.

GOLD BALL FEATURE:

When Gold Ball is kicked to plunger, Top rollover button SPL, center target Gold Ball SPL will be flashing. 2 center target arrows will be on to spot 2 letters at a time (SW. setting) all playfield values are tripled. Gold Ball comes on random bases and of course with a pre set percentage of number of balls.

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"	Set to "02"	Set to "01"
Playfield X-Balls and Specials	AWARD	AWARD	AWARD
Top rollover button Gold Ball Special	REPLAY	X-BALL	50,000
Gold Ball Special	REPLAY	X-BALL*	50,000
Bulls Eye Feature Special	REPLAY	X-BALL*	50,000
1-2-3 Target Feature Special	REPLAY	X-BALL*	50,000
P-L-A-Y Lanes Special	REPLAY	X-BALL*	50,000
P-L-A-Y Lanes X-Ball	X-BALL	X-BALL**	25,000
Self Test Position 17	Set to "03"	Set to "02"	Set to "01"
	AWARD	AWARD	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	}	——	BALLS PER GAME—SEE PAGE 6
31			
30			2 OR 4 PLAYER GAME—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	}	——	MAXIMUM CREDITS—SEE PAGE 5
25			
24			1-2-3 TARGET LITES RECALL—SEE PAGE 7
23			1 OR 2 GOLD BALL ARROWS—SEE PAGE 7
22			CENTER GOLD BALL AND 200,000 LITE—SEE PAGE 7
21			GAME ATTRACT SOUND
20	}	——	COIN CHUTE #3—SEE PAGE 5
19			
18			
17			
16	}	——	GOLD BALL PLAY PERCENTAGE—SEE PAGE 7
15			
14			
13	}	——	COIN CHUTE #2—SEE PAGE 5
12			
11			
10			
9			
8			BONUS LITES RECALL—SEE PAGE 7
7			TOP LANES RECALL VALUES—SEE PAGE 7
6			P-L-A-Y RECALL LITES—SEE PAGE 7
5	}	——	COIN CHUTE #1—SEE PAGE 5
4			
3			
2			
1			

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	S20	S19	S18	S17	Credits/Coin
OFF	OFF	OFF	OFF	Same as Coin Chute #1 Settings	ON	OFF	OFF	OFF	8/1 Coin
OFF	OFF	OFF	ON	1/1 Coin	ON	OFF	OFF	ON	9/1 Coin
OFF	OFF	ON	OFF	2/1 Coin	ON	OFF	ON	OFF	10/1 Coin
OFF	OFF	ON	ON	3/1 Coin	ON	OFF	ON	ON	11/1 Coin
OFF	ON	OFF	OFF	4/1 Coin	ON	ON	OFF	OFF	12/1 Coin
OFF	ON	OFF	ON	5/1 Coin	ON	ON	OFF	ON	13/1 Coin
OFF	ON	ON	OFF	6/1 Coin	ON	ON	ON	OFF	14/1 Coin
OFF	ON	ON	ON	7/1 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

COIN CHUTE	SWITCHES					CREDITS	CREDITS	CREDITS	CREDITS	CREDITS
#1 (HINGE SIDE)	5	4	3	2	1					
OR #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		1/4th Coin	3/4
	ON	ON	OFF	OFF	OFF	0/1st Coin*	1/2nd Coin	1/3rd Coin	2/4th Coin	3/4
	ON	ON	OFF	OFF	ON	1/1st Coin	1/2nd Coin	0/3rd 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
	ON	ON	ON	ON	ON	0/1st Coin****	0/2nd Coin****	1/3rd Coin	0/4th Coin****	1/5th Coin

*No Credits until 2nd coin is dropped.

**No Credits until 4th coin is dropped.

***No Credits until 3rd coin is dropped.

****No 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	
	5	32	31
	4	OFF	ON
	3	ON	OFF
	2	OFF	OFF
		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 10,000,000 SCORE FEATURE:

The game is designed to award free games as an option if high score to date is beat or player exceeds 10,000,000 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.

#1314 GOLD BALL

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 Self-Test button until the #18 shows on the match/credit in display. Now pulse replay button to desired sound setting.

Setting "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:

P-L-A-Y lane lite recall adjustment:

Liberal	SW.6 ON	Any lane lites on will come on for next ball.
Conservative	SW.6 OFF	Any lane lites on will not come on for next ball.

Top lanes extra ball and special recall adjustment:

Liberal	SW.7 ON	Any value lite on will come on for next ball.
Conservative	SW.7 OFF	Any value lite on will not come on for next ball.

(NOTE—IF SHOOT AGAIN IS LIT, SPECIAL WILL BE RECALLED)

Bonus lites recall adjustment:

Liberal	SW.8 ON	Any bonus lites on will come on for next ball.
Conservative	SW.8 OFF	Any bonus lites on will not come on for next ball.

GOLD BALL PLAYING PERCENTAGE:

	SW.14	SW.15	SW.16	%
Liberal	ON	ON	ON	15% ~
	OFF	ON	ON	13%
	ON	OFF	ON	11% ~
	OFF	OFF	ON	9%
	ON	ON	OFF	7%
	OFF	ON	OFF	5% ~
	ON	OFF	OFF	3%
Conservative	OFF	OFF	OFF	1% ~

GAME OVER ATTRACT ADJUSTMENT:

SW.21 ON	Makes game play sounds every minute.
SW.21 OFF	No Sounds.

Center Gold ball special & 200,000 lite adjustment.

Liberal	SW.22 ON	Gold ball special will lite with 200,000.
Conservative	SW.22 OFF	Gold ball 200,000 will lite then special.

Gold Ball 1 or 2 arrow lite flash adjustment:

Liberal	SW.23 ON	When Gold Ball comes out 2 arrows flash.
Conservative	SW.23 OFF	When Gold Ball comes out 1 arrow flashes.

1-2-3 Targets lite recall adjustment:

Liberal	SW.24 ON	Any target lites on will come on for next ball.
Conservative	SW.24 OFF	Any target lites on will not come on for next ball.

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.

2 or 4 player adjustment:

SW.30 ON	Game play for 4 player.
SW.30 OFF	Game play for 2 player.

2 and 3 or 4 and 5 ball game set up:

2 and 3 ball—multiplier special comes on with 100K.
4 and 5 ball—multiplier 100K comes on first then special.

C. FRONT DOOR GAME ADJUSTMENTS

High Score Feature Adjustments:

The game is designed to award an extra ball (option) of 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 10,000,000 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 10,000,000 Feature:

The game is designed to award free games when 'High Score to Date' is beat, or if the player exceeds 10,000,000 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 10,000,000 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:

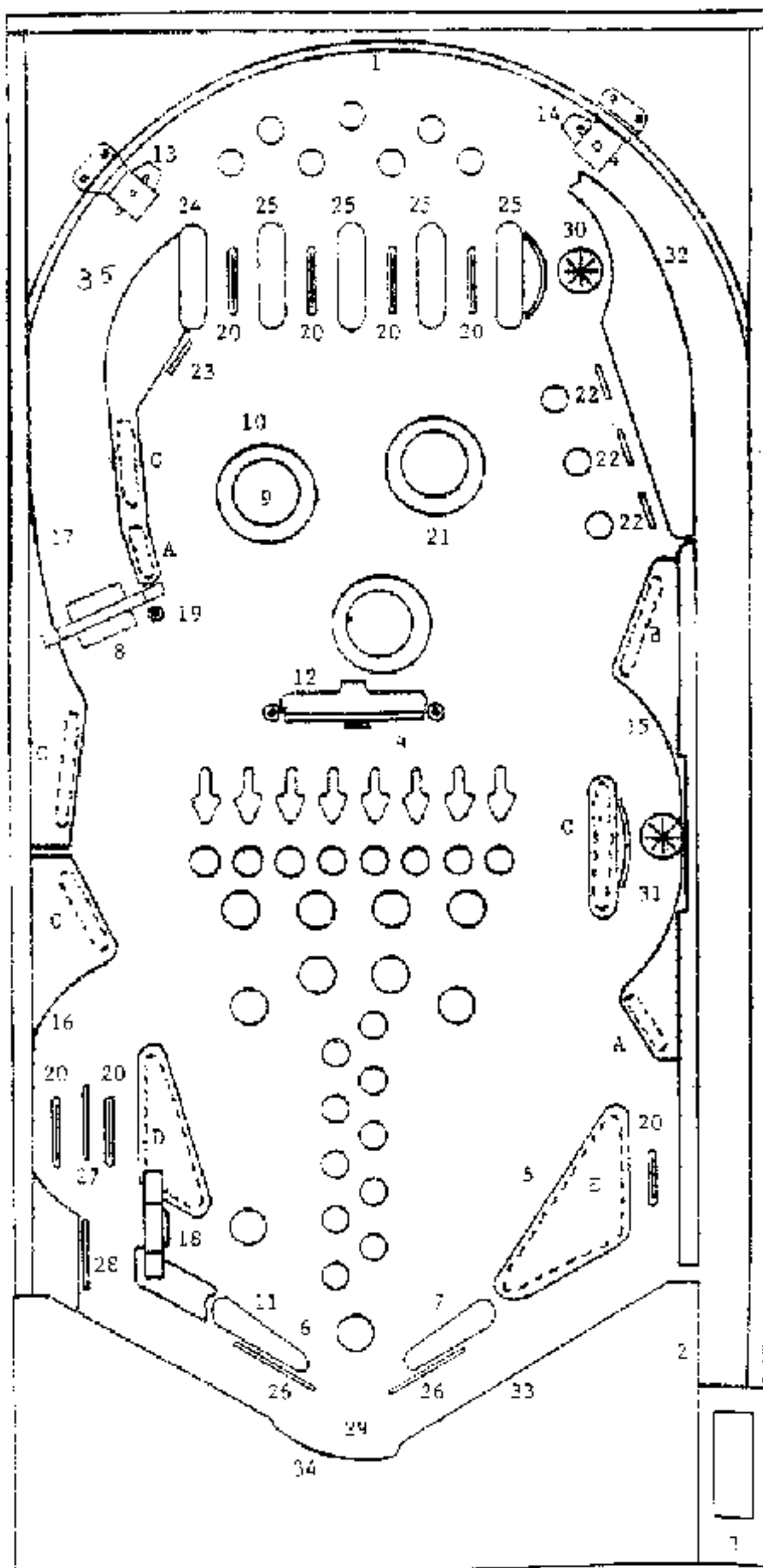
To set up positions 16-19 push and release self test button till 16 shows on match/ball in play. Now pulse replay button for recommended setup from "00" thru "03." Repeat for positions 17, 18 or 19.

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.)



GOLD BALL #0371 RUBBER PARTS

A. 0017-00041-0642	3/4" DIA	(3)
B. 0017-00041-0643	1" DIA	(1)
C. 0017-00041-0644	1 1/2" DIA	(4)
D. 0017-00041-0645	2" DIA	(1)
E. 0017-00041-0647	3" DIA	(1)
F. 0017-00041-0637	5/16" DIA	(13)
G. 0017-00041-0641	METAL POST	(5)
H. 0017-00041-0653	FLIPPER	(2)

PANEL PARTS

1. Arch Rail	M-1774
2. Bottom Arch	0371-00120-00XF
3. Shooter Gauge	0371-00121-00XF
4. Bullseye Target Ass'y	A371-00016-0000
5. Slingshot Ass'y	A967-00059-0000
	ASE-2593-5
6. Flipper Ass'y (L)	A360-00267-0000
	ASE-1587-112
7. Flipper Ass'y (R)	A360-00268-0000
	ASE-1587-111
8. Spinner & Gate Ass'y	A371-00023-0000
9. Bumper Cap (Stamped)	A371-00021-0000 (3)
10. Bumper Collar	0017-00042-0403 (3)
	C-1018-3
11. Molded Flipper	A967-00031-0000 (2)
	A-3994-5
12. Target Cover	0371-00108-0000
13. Ball Gate Ass'y (L)	A360-00022-0000
	A-1475-12
14. Ball Gate Ass'y (R)	A360-00023-0000
	A-1475-13
15. Ball Guide Ass'y	A371-0009-0000
16. Ball Guide Ass'y	A371-0010-0000
17. Ball Guide Ass'y	A371-0011-0000
18. Ball Gate & Wire Ass'y	ASE-2250-91
19. Mini-Post & Bumper Ass'y	A360-00218-0000 (3)
	ASE-2836-2
20. Wire Actuator Ass'y	A360-00216-0000 (7)
	ASE-2806-10
21. Thumper Bumper Ass'y	A967-00053-0000 (3)
22. Target Switch Ass'y	A360-00249-0000 (3)
	A-3359-20
23. Target Switch Ass'y	A360-00248-0000
	A-3359-19
24. Guide Rail	C-696-11
25. Guide Rail	C-695-11 (4)
26. Buffer Wire	0627-00172-0000 (2)
	M-121-53
27. Ball Guide Wire	0360-00175-5600
	M-121-56
28. Ball Guide Wire	0360-00957-8400
	M-121-84
29. Ball Guide Wire	0371-00106-0000
30. Ball Guide Wire	0371-00107-0000
31. Ball Guide Wire	0371-00902-0000
32. Ball Guide Wire	0371-00903-0000
33. G. B. Feature Kicker Ass'y	A371-00033-0000
34. Outhole Gate Coil Ass'y	A371-00014-0000
35. Ball Guide Wire	M-121-62

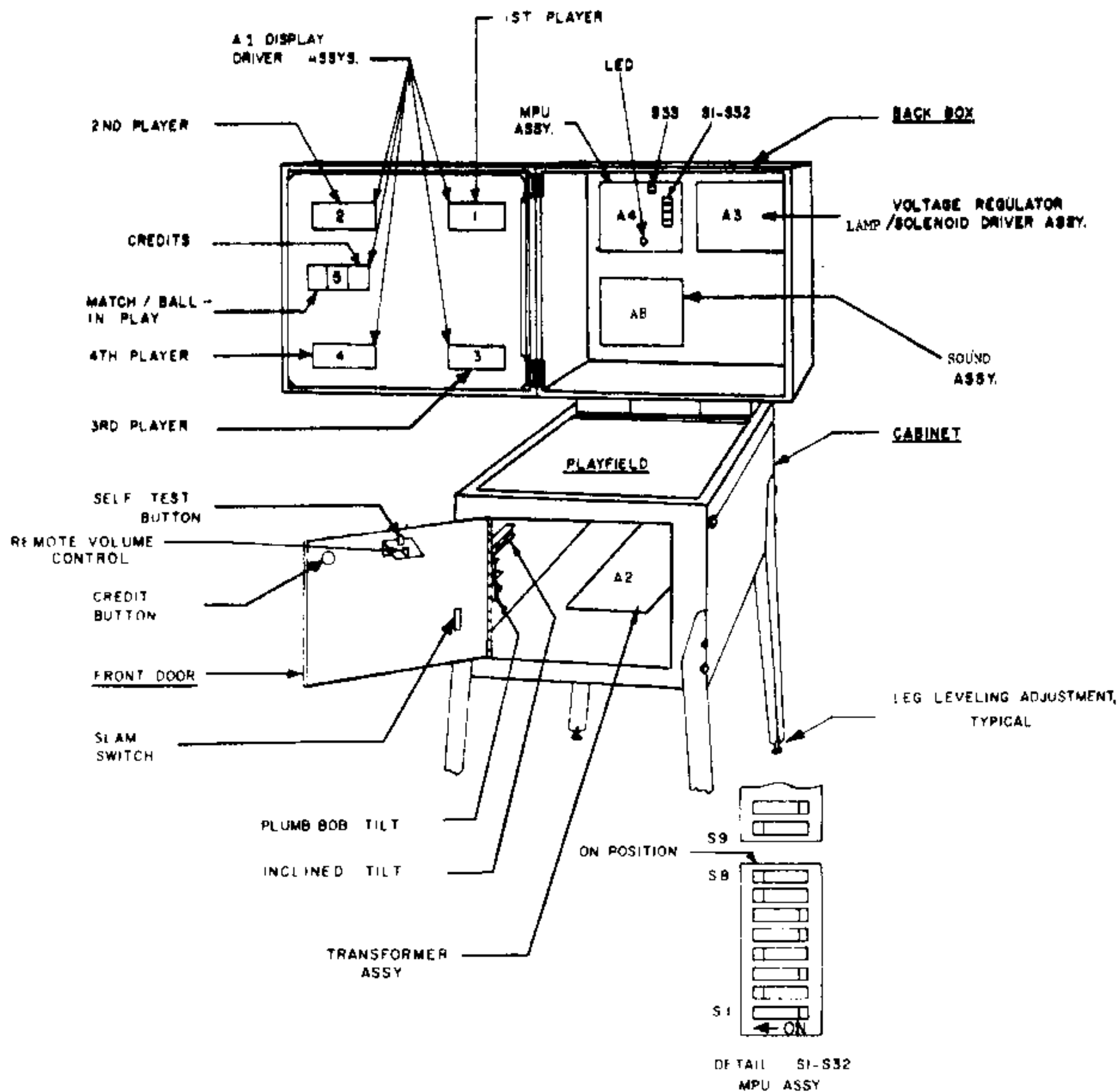


FIGURE III. ELECTRONIC PIN BALL MACHINE

RECOMMENDED

Instructions, Score Cards and High Score Feature Settings
to be used on GOLD BALL 0371

3-BALL

REPLAYS

Instruction Card M-051-00371-A020
Score Card M-051-00371-A028

1 Replay at 850,000
1 Replay at 1,250,000

5-BALL

REPLAYS

Instruction Card M-051-0371-A020
Score Card M-051-00371-A029

1 Replay at 1,000,000
1 Replay at 1,500,000

EXTRA BALL

Instruction Card M-051-00371-A022
Score Card M-051-00371-A029
W/M-051-00371-A074

1 Extra Ball at 1,200,000
1 Extra Ball at 1,800,000

ADDITIONAL CARDS

REPLAYS

M-051-00371-A040	400,000	900,000
M-051-00371-A041	450,000	1,000,000
M-051-00371-A042	500,000	1,000,000
M-051-00371-A043	500,000	1,100,000
M-051-00371-A044	550,000	1,100,000
M-051-00371-A045	600,000	1,100,000
M-051-00371-A046	650,000	1,200,000
M-051-00371-A047	700,000	1,200,000
M-051-00371-A048	700,000	1,400,000
M-051-00371-A049	800,000	1,400,000
M-051-00371-A050	900,000	1,400,000
M-051-00371-A051	900,000	1,500,000
M-051-00371-A052	1,000,000	1,500,000
M-051-00371-A053	1,000,000	1,600,000
M-051-00371-A054	1,000,000	1,800,000
M-051-00371-A055	1,000,000	1,900,000
M-051-00371-A056	1,100,000	1,800,000
M-051-00371-A057	1,100,000	1,900,000
M-051-00371-A064	1,300,000	1,800,000
M-051-00371-A065	1,300,000	1,900,000
M-051-00371-A066	1,500,000	1,800,000
M-051-00371-A067	1,500,000	1,900,000
M-051-00371-A058	1,600,000	
M-051-00371-A059	1,900,000	

EXTRA BALL

M-051-00371-A072	1,000,000	1,800,000
M-051-00371-A073	1,100,000	1,900,000
M-051-00371-A074	1,200,000	1,800,000
M-051-00371-A075	1,400,000	1,900,000

Instruction Card Novelty
M-051-00371-A024

M-051-00371-A026
M-051-00371-A027

BLANKS (3)

High game to date recommended levels;
(reset periodically)
3 BALL 1,450,000
5 BALL 1,700,000

GOLD BALL 0371 RECOMMENDED SETTINGS

RECOMMENDED REPLAY GAME SETTING FOR:

P-L-A-Y LANE LITE RECALL	SW.6	3-BALL ON	5-BALL ON
TOP LANES EXTRA BALL AND SPECIAL RECALL	SW.7	OFF	OFF
BONUS LITES RECALL	SW.8	ON	OFF
	SW.14	OFF	ON
GOLD BALL PLAYING PERCENTAGE	SW.15	OFF	ON
	SW.16	ON	OFF
GAME OVER ATTRACT	SW.21	ON	OFF
CENTER GOLD BALL SPECIAL & 200,000 LITE	SW.22	ON	ON
GOLD BALL 1 OR 2 ARROW LITE	SW.23	ON	ON
1-2-3 TARGETS LITE RECALL	SW.24	ON	OFF
NUMBER OF REPLAY PER GAME	SW.29	ON	ON
2 PLAYER GAME	SW.30	OFF	OFF
BALLS PER GAME	SW.31	OFF	ON
BALLS PER GAME	SW.32	OFF	OFF

REPLAYS

Instruction Card
Score Cards
Major Mode

3-BALL

M-051-00371-A020
M-051-00371-A028
Self Test Position 16, 17
Set to "03"
SW.28 ON
Self Test Position 19
Set to "03"

5-BALL

M-051-0371-A020
M-051-00371-A029
Self Test Position 16, 17
Set to "03"
SW.28 ON
Self Test Position 19
Set to "03"

X-BALL

Instruction Card
Score Card
Major Mode

Match
High Score to Date

M-051-00371-A022
M-051-00371-A029 W/M-051-00371-A074
Self Test Position 16, 17
Set to "02"
SW.28 OFF
Self Test Position 19
Set to "00"

NOVELTY

Instruction Card
Score Card
Major Mode

Match
High Score to Date

M-051-00371-A024
M-051-00370-A026
Self Test Position 16, 17
Set to "01"
SW.28 OFF
Self Test Position 19
Set to "00"

M-051-00371-A024
M-051-00370-0027
Self Test Position 16, 17
Set to "01"
SW.28 OFF
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.

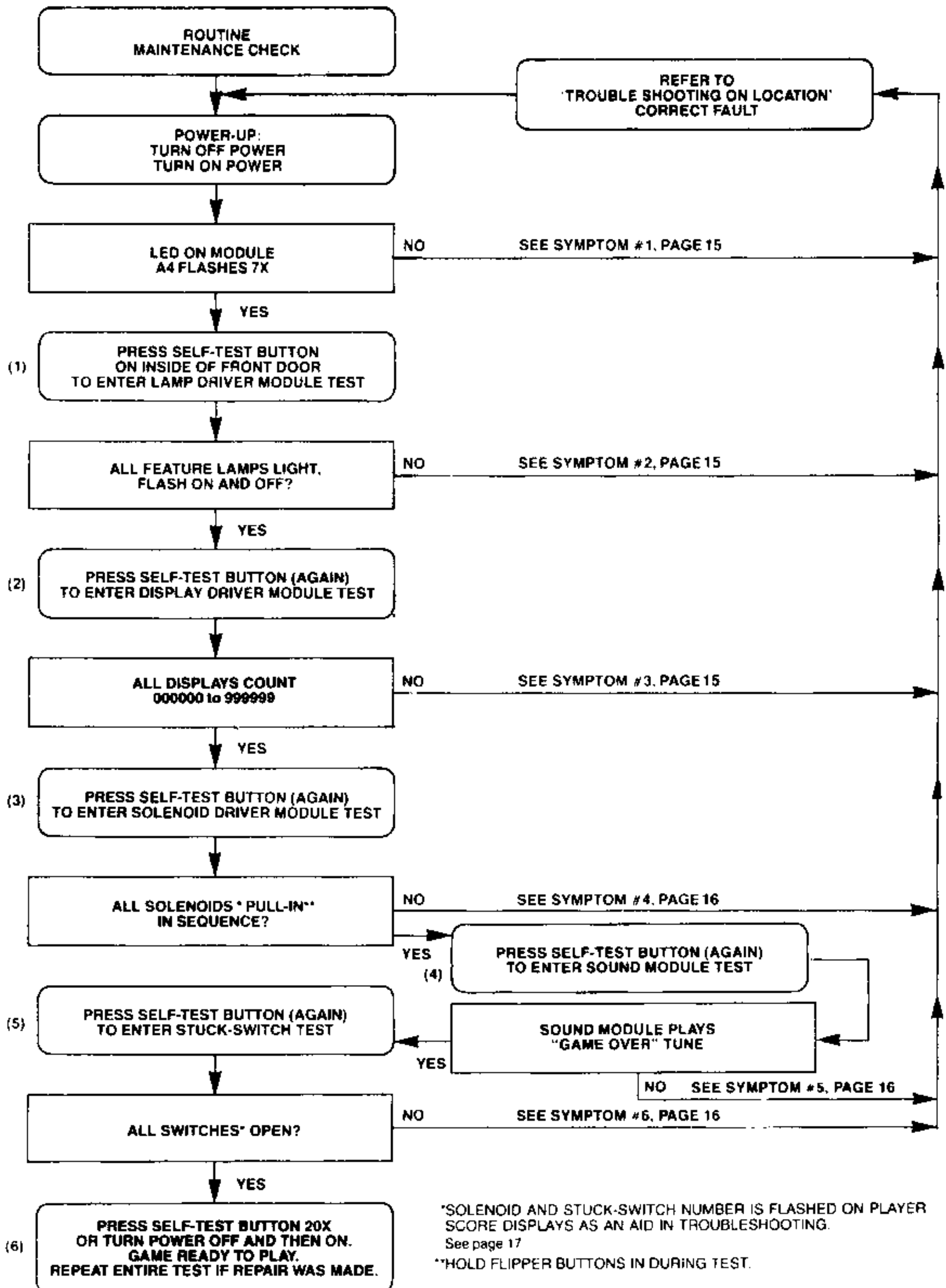
After successful completion of the Self Diagnostic Test procedure, set the game up for play. Exercise each rollover, thumper-bumper, slingshot, etc., by hand until each switch assembly on the playfield has been checked for proper operation. If actuating a switch assembly results in intermittent or no 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



- 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 does not come on, or does not flash, or flashes, but 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.
 - C)** Replace bulbs that do not flash.
 - D)** If game is correct, it is now ready for play.
 - E)** If game is not correct, turn power OFF. Replace Lamp Driver Module A5. 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 #0371 GOLD BALL

SOLENOID IDENTIFICATION TABLE

Self-Test #	SOLENOID IDENTIFICATION	Self-Test #	SOLENOID IDENTIFICATION
01	LEFT THUMPER BUMPER	07	GOLD BALL OUTHOLE KICKER
02	LOWER THUMPER BUMPER	08	OPEN OUTHOLE GATE
03	RIGHT THUMPER BUMPER	09	COIN LOCKOUT DOOR
04	RIGHT SLINGSHOT	10	K1 RELAY (FLIPPER ENABLE)
05	KNOCKER	11	CLOSE OUTHOLE GATE
06	REGULAR BALL OUTHOLE KICKER		

SWITCH ASSEMBLY SELF-TEST DISPLAY NUMBERS

Switch Self-Test #	DESCRIPTION	Switch Self-Test #	DESCRIPTION
01	LEFT THUMPER BUMPER	17	LEFT OUTLANE
02	LOWER THUMPER BUMPER	18	LEFT RETURN LANE
03	RIGHT THUMPER BUMPER	19	RIGHT SIDE ROLLOVER BUTTON
04	RIGHT SLINGSHOT	20	TOP ROLLOVER BUTTON
05	RIGHT FLIPPER BUTTON	21	"P" LANE
06	CREDIT BUTTON	22	"L" LANE
07	SPINNER	23	"A" LANE
08	OUTHOLE REGULAR	24	"Y" LANE
09	COIN III (RIGHT)	25	SINGLE TARGET
10	COIN I (LEFT)	26	RIGHT OUTLANE
11	COIN II (MIDDLE)	27	REBOUNDS (4)
12	#1 TARGET	28	BULLS EYE SIDE SW. (2)
13	#2 TARGET	29	BULLS EYE
14	#3 TARGET	30	OUTHOLE GOLD BALL
15	TILT (3)	31	LEFT LOWER REBOUND
16	SLAM (2)	32	

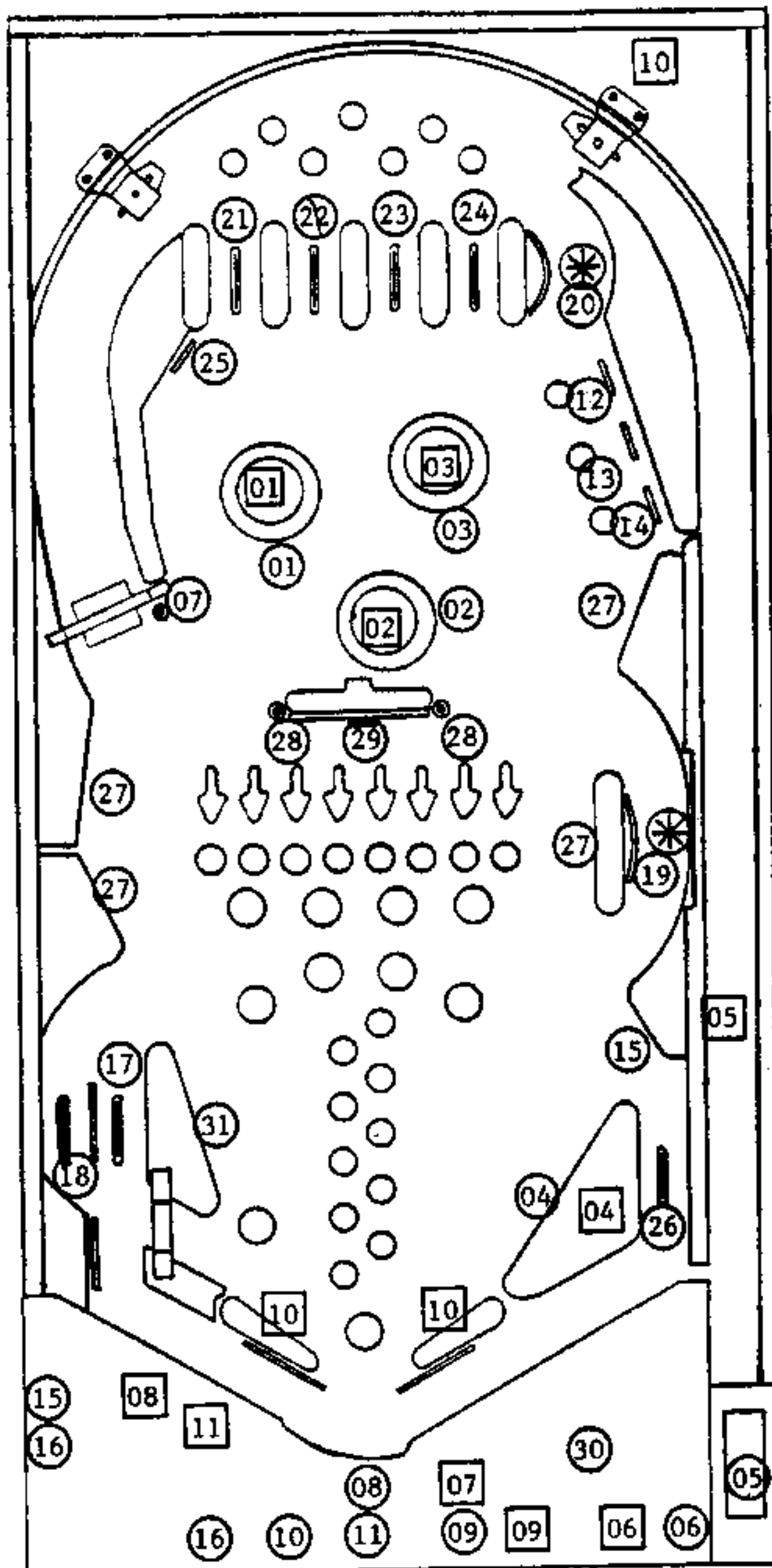


FIGURE V

#0371 GOLD BALL
INDICATES SWITCH ASSEMBLY
IDENTIFICATION NUMBERS

Note: CABINET: 05, 15, 16
 DOOR: 06, 09
 10, 11, 16

INDICATES SOLENOID
IDENTIFICATION NUMBERS

NOTE: DOOR: 09
 BACKBOX: 10
 CABINET: 05

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" over-travel 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 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 MIDWAY MFG. CO.
10601 WEST BELMONT AVENUE
FRANKLIN PARK, ILLINOIS 60131
ATTN: PARTS DEPARTMENT

SERVICE HINTS:

The Bally playfield has an improved tuff-coat finish with excellent wearing properties. Its life expectancy, 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.

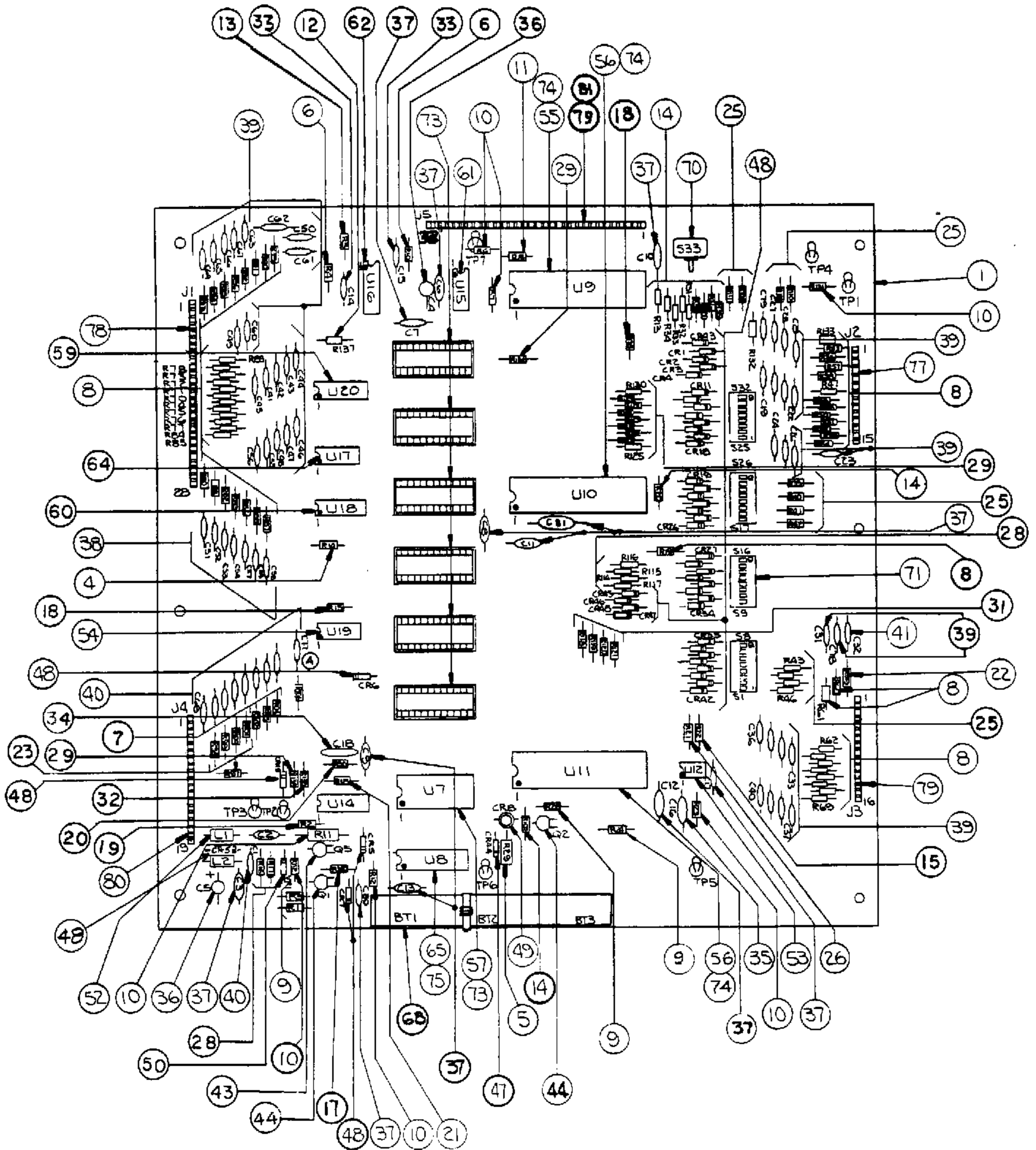
DON'T: Use water in large quantities, highly caustic cleaners, abrasive cleaners or cleaning pads on the playfield. Do not allow a wax or polish build up. Waxes yellow with age and spoil play appeal.

XI. PARTS LIST

GOLD BALL #0371

	MIDWAY PART NUMBER	BALLY PART NUMBER
MISCELLANEOUS		
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	A360-00208-0000	FO-366-7000
Flipper (3)	A360-00045-0000	AQ-25-500/ 34-4500
Open Outhole Gate		C-31-2000
Close Outhole Gate		C-31-2000
Knocker	A360-00046-0000	AR-26-1200
Outhole Kicker	A360-00211-0000	AO-27-1300
Thumper Bumper (3)	A360-00044-0000	AN-26-1200
Gold Ball Outhole Kicker	A360-00211-0000	AO-27-1300
PLAYFIELD PARTS		See Figure II
MODULES		
H.V. Lamp/Solenoid Driver Comb.	A084-91493-A000	AS-2518-147
Display Driver A1 (6 used) on 4 Player (4 used) on 2 Player	A084-91491-A000	AS-2518-21
MPU A4	A084-19494-A371	
Transformer & Rectifier A2	A360-00274-0001	AS-2877-13
Rectifier Board (Part of A2)	A084-91492-A000	AS-2518-151
Sound	A084-91495-A371	
Auxiliary Driver	A084-91620-A000	AS-2518-68
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		

AO82-91494-A000 MPU MODULE

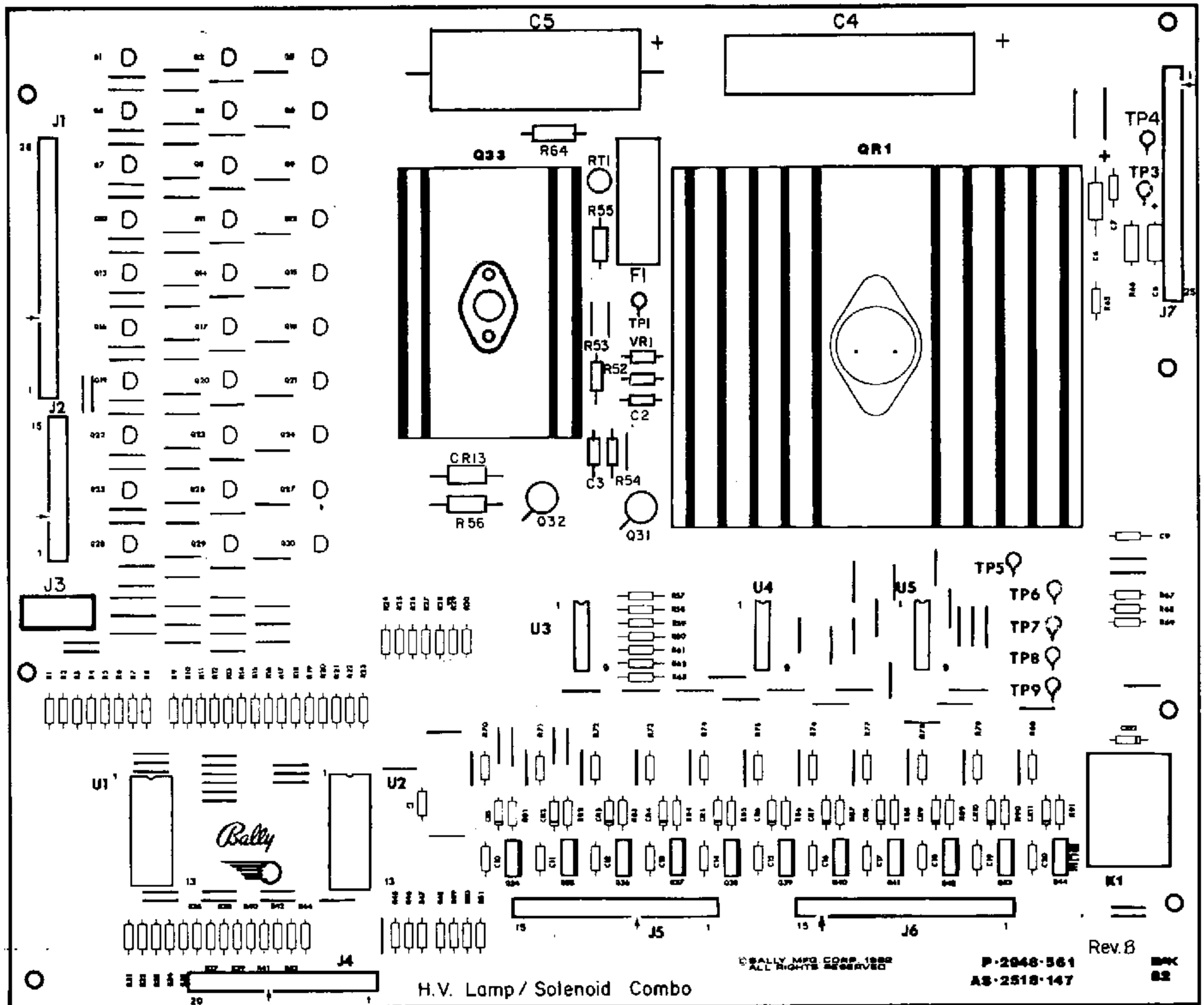


A4: MPU MODULE COMPONENT PARTS LIST

ITEM	REFERENCE DESIGNATION	BALLY PART #	DESCRIPTION
1	A4 (see note 1)	A084-91494-A371	MPU Module Complete.
2	A4 (see note 2)	A082-91494-A000	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 (1N4004)
48	CR1-CR7, CR11-CR43, CR45-CR49, CR52	E-00587-0014	Diode (1N4148)
49	CR8	E-00679	LED (Green)
50	VR1	E-00598-0008	Diode Zener (8.2V, 1N9598)
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.

A084-91493-A000 H.V. LAMP/SOLENOID DRIVER COMBINATION BOARD

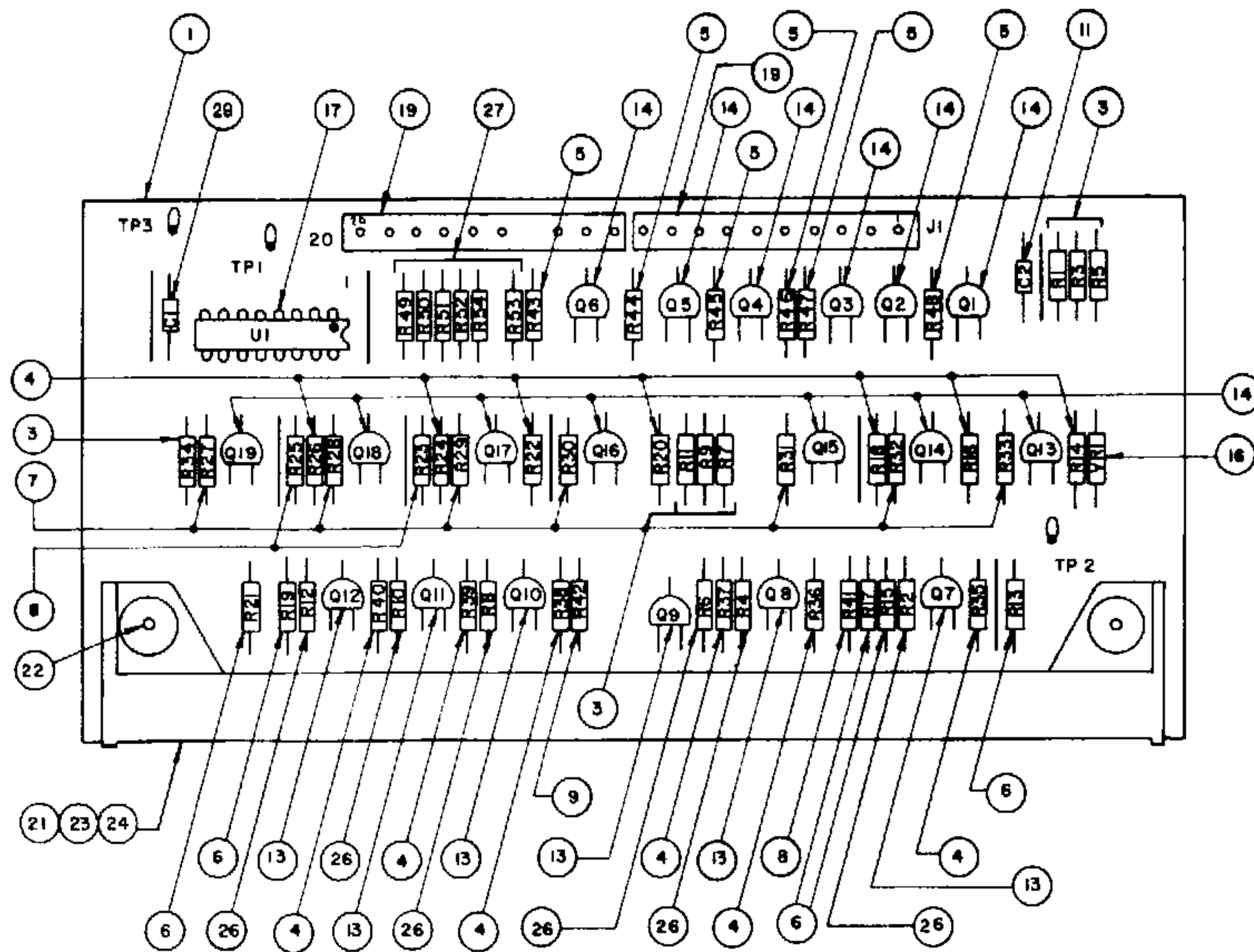


DESCRIPTION	DESIGNATION	QUANTITY	PART NO.
.01uf 25v cer cap	C1	1	E-586-85
.01uf 500v cer cap	C2, 3	2	E-586-65
.1uf 50v cer cap	C6, 8, 9	3	E-586-159
.002uf 1kv cer cap	C10-20	11	E-586-64
2uf 50v Lythic cap	C7	1	E-586-63
160uf 350v Lythic cap	C5	1	E-586-59
11,000uf 20v Lythic cap	C4	1	E-586-62
Tie wraps	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

A084-91493-A000 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
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 ¼w 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

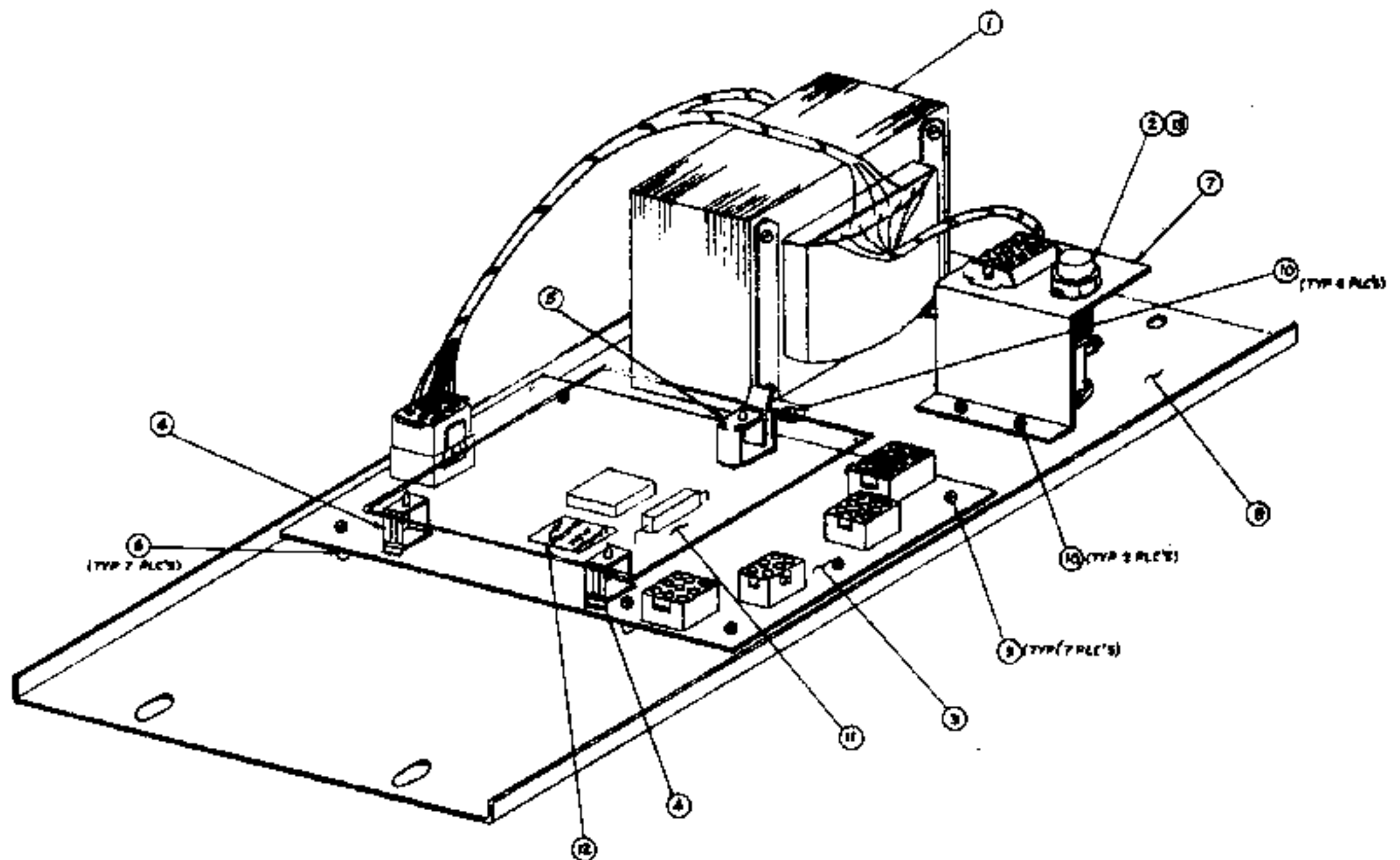
A084-91491-A000 CREDIT DISPLAY DRIVER MODULE



A1: 6 DIGIT DISPLAY DRIVER MODULE COMPONENT PARTS LIST

ITEM	QTY.	REFERENCE DESIGNATION	BALLY PART #	DESCRIPTION
1	1	A1	A084-91491-A000	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

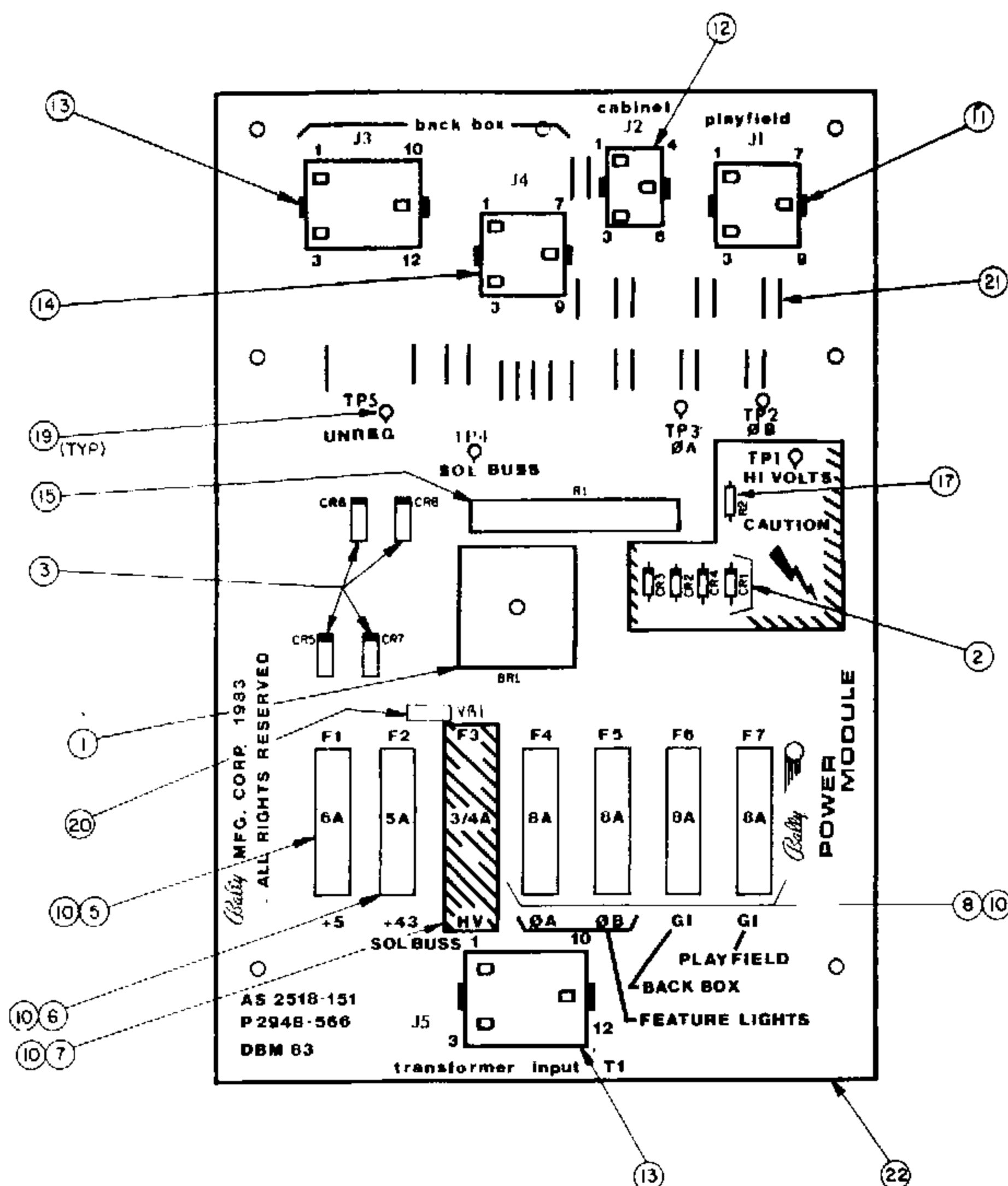
A2: POWER TRANSFORMER MODULE



COMPONENT PARTS LIST

ITEM	REFERENCE DESIGNATION	BALLY PART #	DESCRIPTION
0	A2	AS-2877-13 A360-00274-0001	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

A084-91492-A000 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

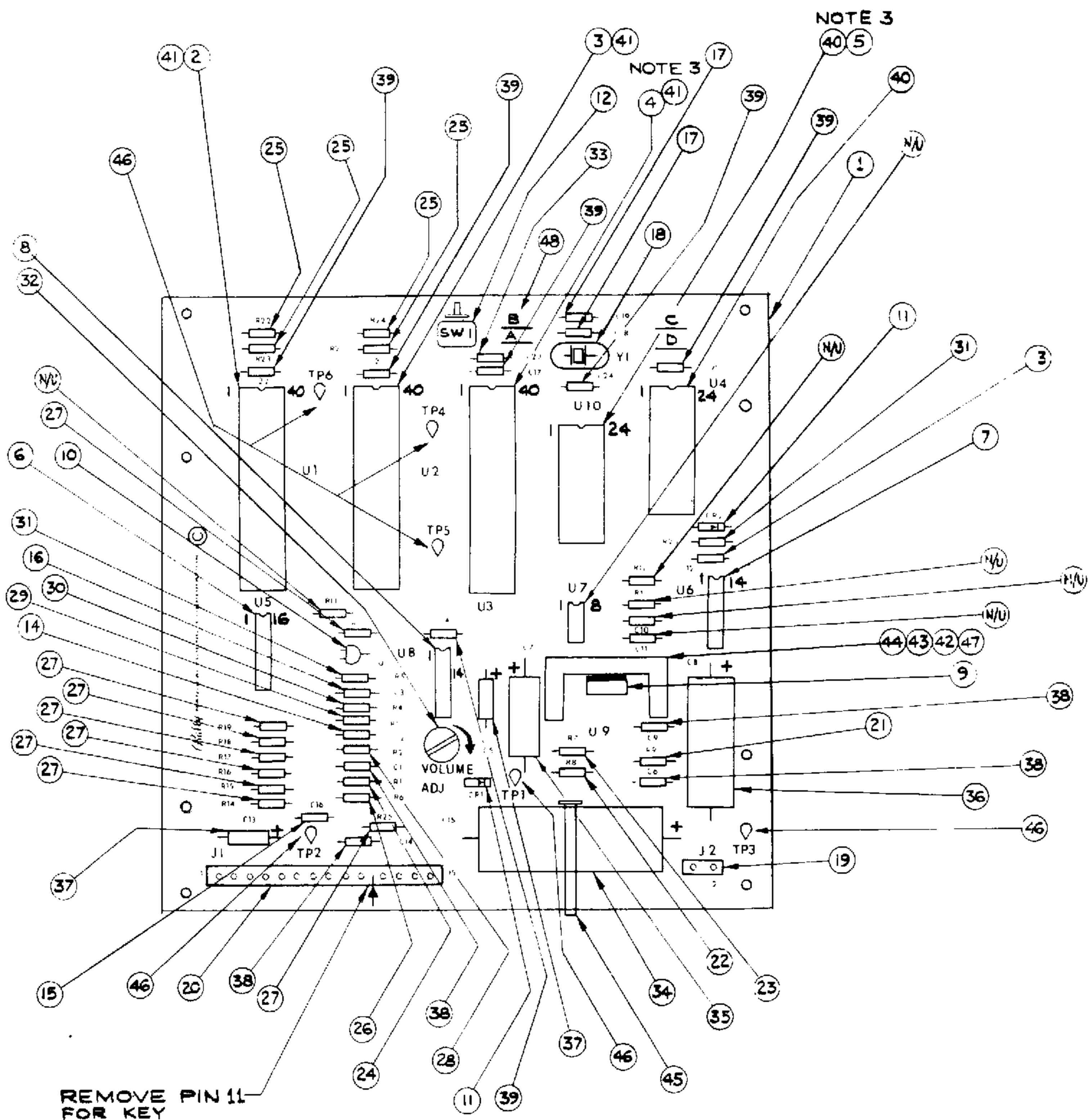
ITEM	REFERENCE DESIGNATION	BALLY PART NO.	DESCRIPTION
1	A8 (see note 1)	A084-91485-A371	PWB Module Complete
2	U1	E-620-124	Sound Chip AY-3-8910
3	U2	E-620-29	PIA, 6820/21
4	U3	E-620-125 (E620-128)	CPU, 6808 (6802 Note 3)
5	U10	E-620-30	Ram, 6810 (Note 3)
6	U5	E-620-33	Hex Inverter 4049B
7	U6	E-620-5	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 $\pm$ 20% Y5P, 16 V.
14	C2	E-586-130	Cap. .47 $\pm$ 20%
15	C16	E-586-83	Cap. 470 PF 50 V.
16	C3	E-586-120	Cap. 68 PF, $\pm$ 20% 1K
17	C18, 19	E-586-121	Cap. 27 PF, $\pm$ 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, 1/4 W., 5%
22	R8	E-105-211	Resistor, 2.2 Ohm, 1/4 W., 5%
23	R7	E-105-303	Resistor, 220 Ohm, 1/4 W., 5%
24	R1	E-105-230	Resistor, 1 K, 1/4 W., 5%
25	R21, 22, 23, 24	E-105-238	Resistor, 3.3K. Ohm, 1/4 W., 5%
26	R6	E-105-239	Resistor, 4.7K., 1/4 W., 5%
27	R3, 14, 15, 16, 17, 18, 19, 25	E-105-185	Resistor, 10K., 1/4 W., 5%
28	R2	E-105-245	Resistor, 30K., 1/4 W., 5%
29	R10	E-105-252	Resistor, 180K., 1/4 W., 5%
30	R4	E-105-225	Resistor, 200K., 1/4 W., 5%
31	R5, 20	E-105-285	Resistor, 1M, 1/4 W., 5%
32	RT1	E-599-16	Potentiometer 1K
33	C23	E-586-122	Cap. .001 $\pm$ 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 3/8
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		22 AWG Wire, Solid Tinned
		M051-00114-A035	Schematic

NOTE 1: When ordering specify name of game.

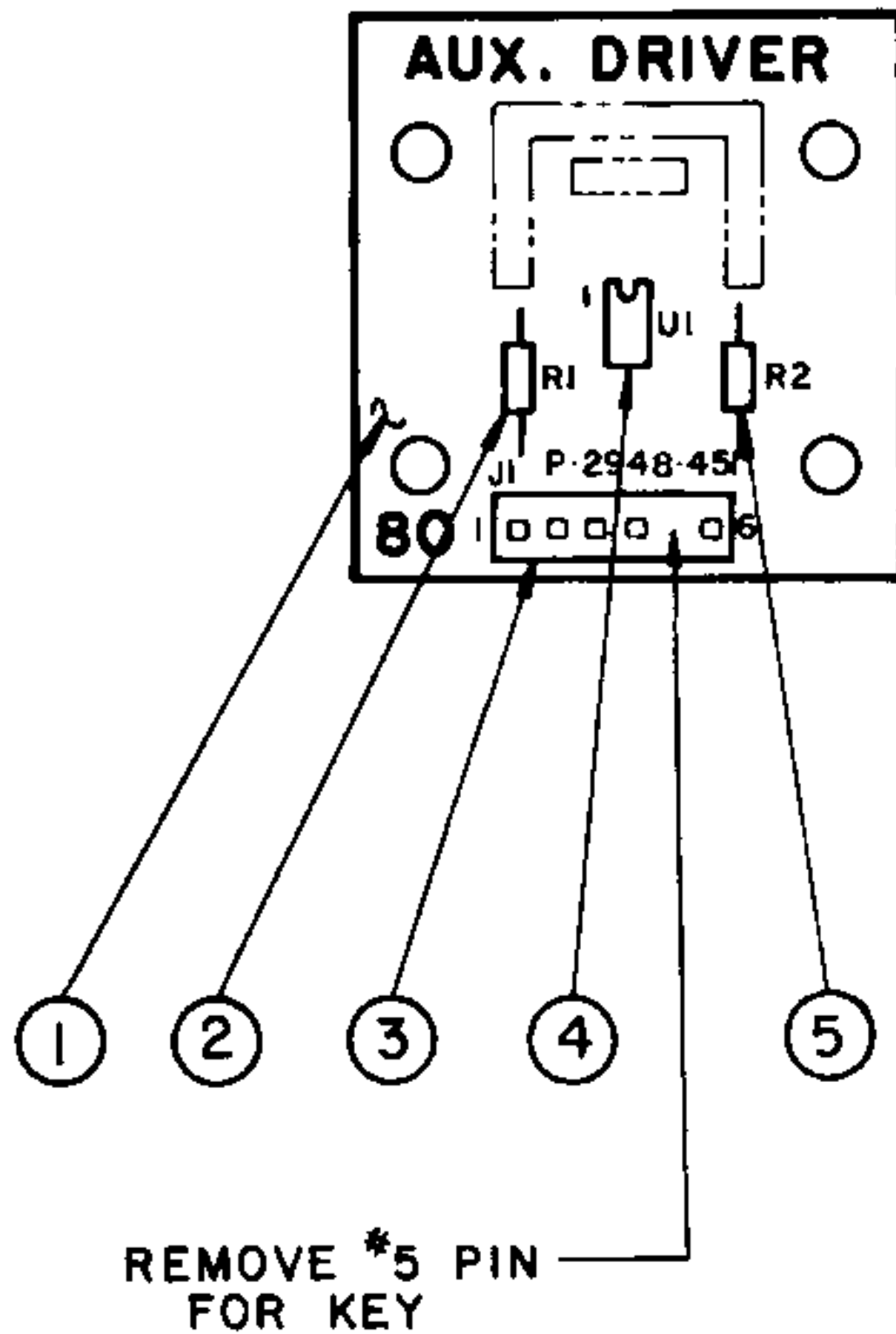
NOTE 2: Order replacement memory chip U4 specifying name of game and part no. stamped on chip.

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.

A084-91495-A360 SOUND MODULE



**A17 Auxiliary Driver—G.I. Flasher
AS-2518-68**



COMPONENTS PARTS LIST

ITEM	QTY.	REFERENCE DESIGNATION	DESCRIPTION	BALLY PART #
1	1	P-2948-451	P.C. Board	M-645-584
2	1	R1	330 Ω , 5% $\frac{1}{4}$ W.	E-105-219
3	1	J1	6 Pin Wafer—KK156	E-736-6
4	1	U1	OPT./CP, MOC 3011	E-620-172
5	1	R2	10 Ω , 5%, $\frac{1}{4}$ W.	E-105-306
REF.			Schematic	W-1253 b

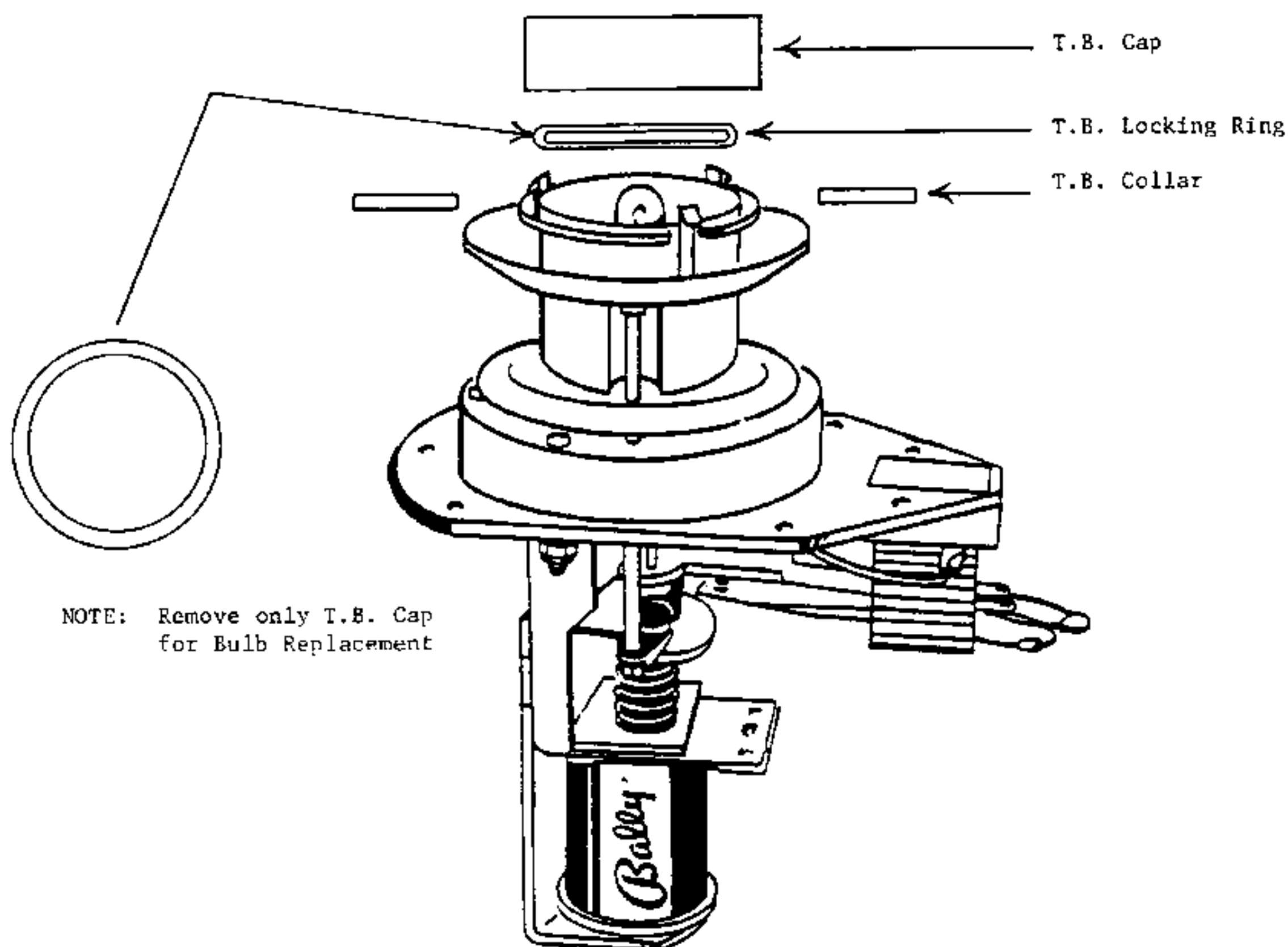
PART # 0017-00042-0414

NAME: Thumper Bumper Collar Locking Ring

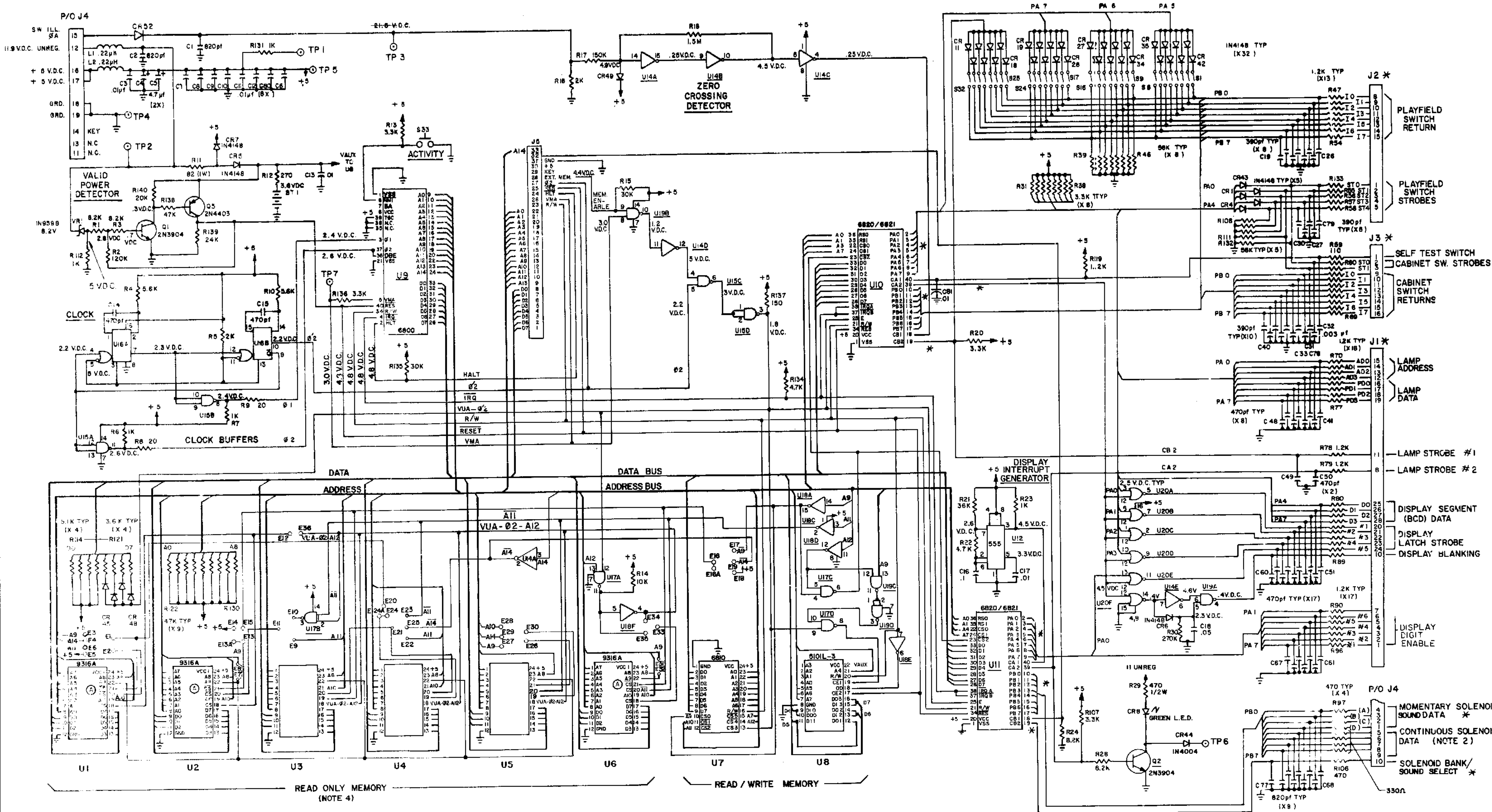
DESCRIPTION: Ring locks T.B. collar onto T.B. body - prevents T.B. collar from coming off.

INSTALLATION: 1) Ring is to be installed after T.B. collar is on.
2) Install ring inside of tabs on T.B. body from top, press flush to T.B. body.
3) Then install T.B. cap onto T.B. collar.

REMOVAL: 1) Take off T.B. cap.
2) Remove ring with small blade of a flat screwdriver or similar tool.
3) Remove T.B. collar.



THUMPER BUMPER ASSEMBLY
AS-2999

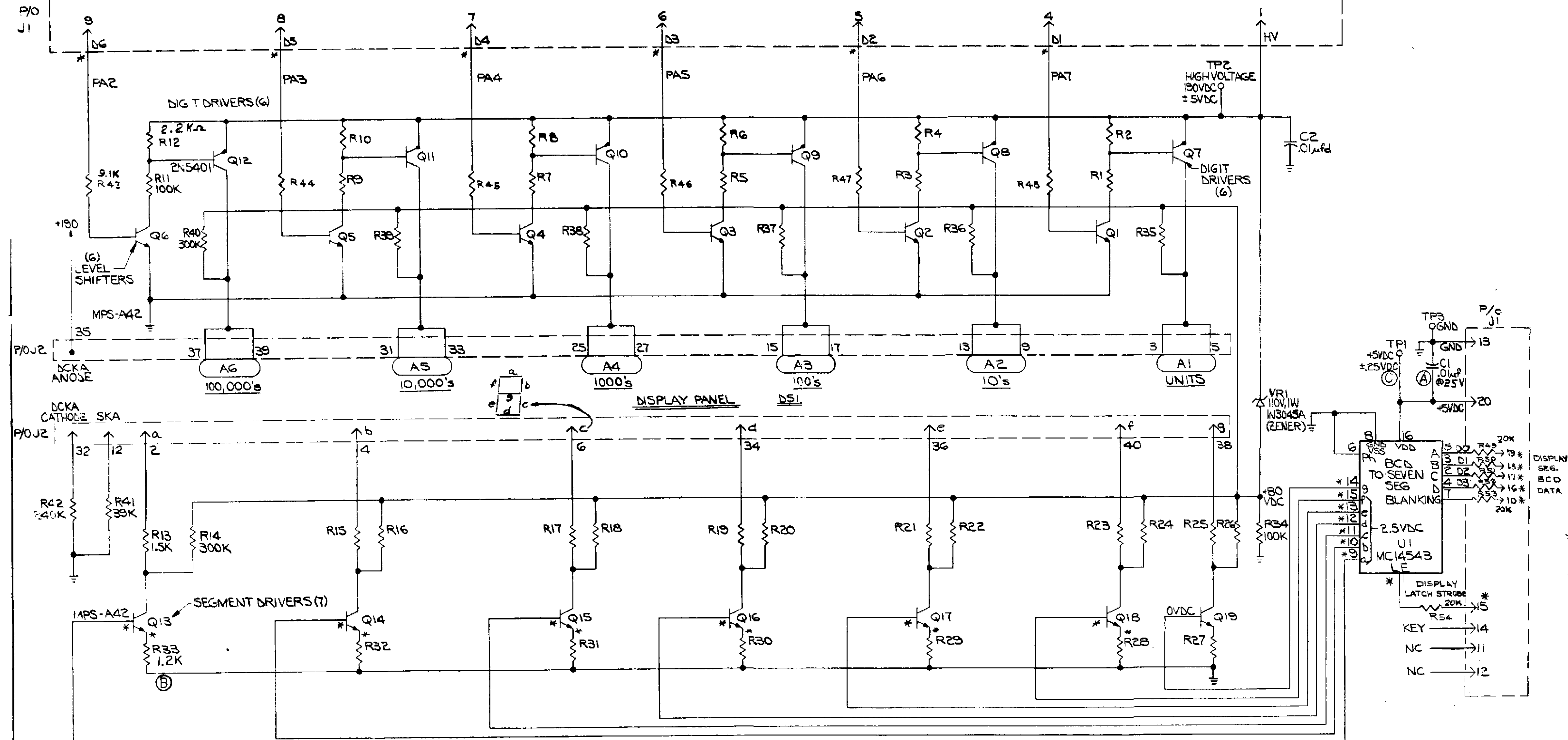


NOTES

1. * INDICATES "AID" TEST POINT.
2. REMOVE A3J4 BEFORE USING AS AID TEST POINT. MAX. 4K 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.

Bally MANUFACTURING CORP.			
7640 BELMONT AVENUE CHICAGO, ILLINOIS 60630			
DR. BY	DATE	1295	
CHK. BY	DATE		
APP'D BY	DATE		
FINISH	DATE		
M.P.U. CONTROL BOARD SCHEMATIC		PART NO. W-1181-4 c	
DO NOT SCALE DRAWING			

DISPLAY DIGIT ENABLE



NOTES:

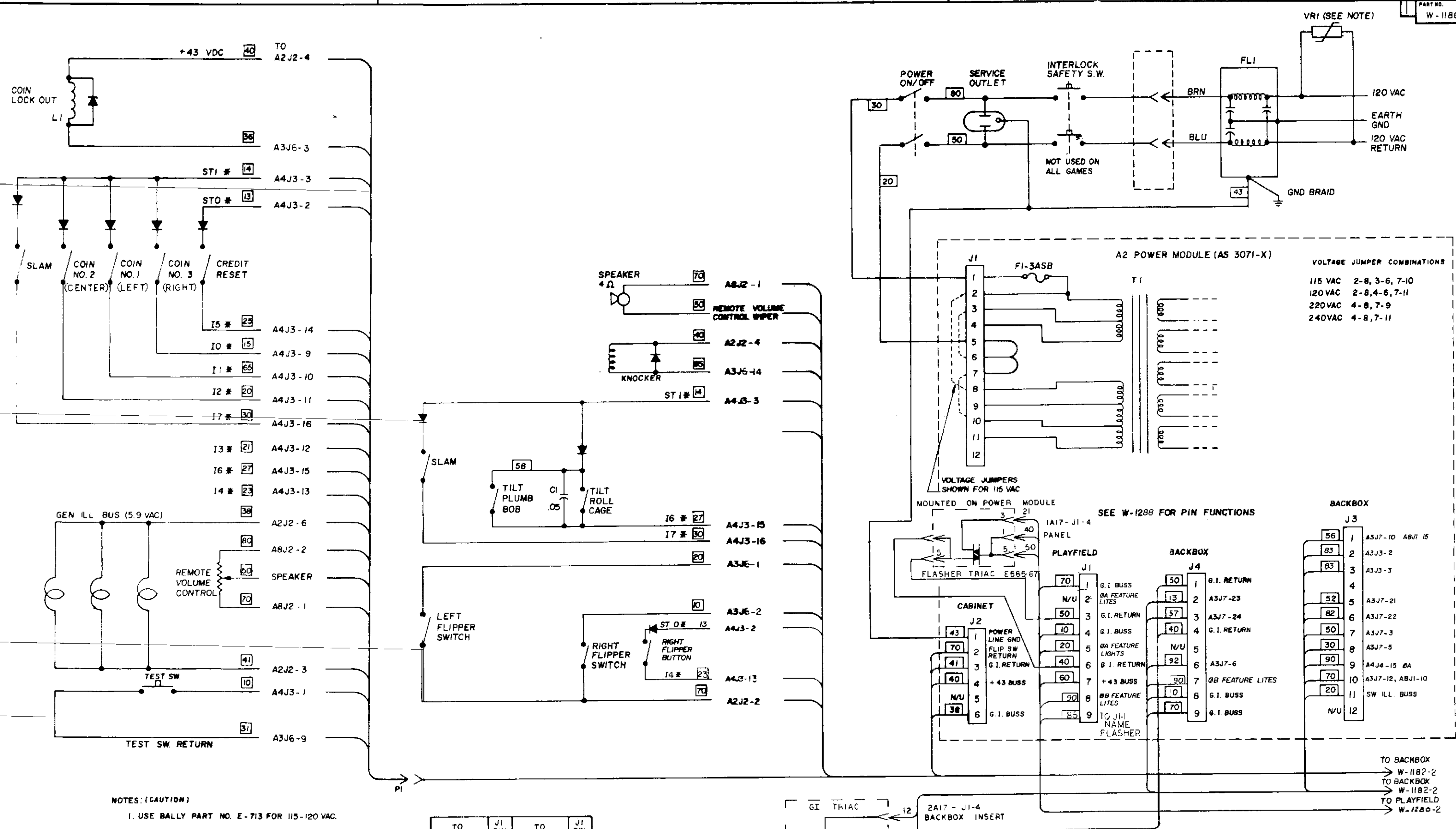
1. UNLESS OTHERWISE SPECIFIED ALL RESISTORS ARE $\pm 5\%$, $1/4W$.
2. PREFIX ALL REFERENCE DESIG. WITH ASSEMBLY REFERENCE DESIG. "A"
3. * INDICATES 'AID' TEST POINT.

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

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REMOVE ALL BURRS		DATE: 7-7-77		BY: J.S.	
TOLERANCES ON DIMENSIONS UNLESS OTHERWISE SPECIFIED		DATE: 7-7-77		BY: J.S.	
FRACTIONS: 1/16"		DATE: 7-7-77		BY: J.S.	
DECIMALS: .001"		DATE: 7-7-77		BY: J.S.	
ANGLES: 1°		DATE: 7-7-77		BY: J.S.	
DO NOT SCALE DRAWING		DATE: 7-7-77		BY: J.S.	
MATERIAL		NAME		ASSN. NO. USED ON/	
PART NO.		NAME		ASSN. NO. USED ON/	
W-1184-1c		NAME		ASSN. NO. USED ON/	

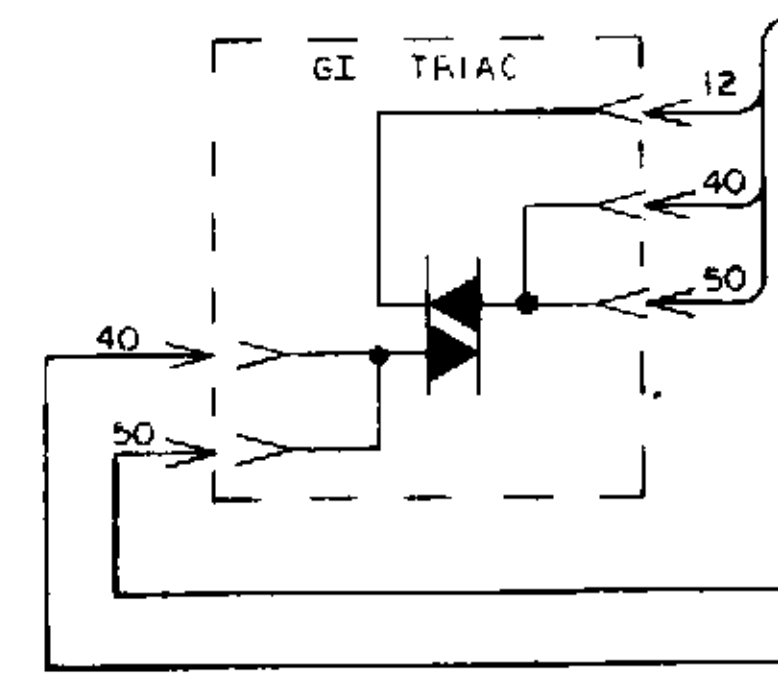
3	C	WAS VAC	620.80	J.D.
2	B	WAS 1K	328.90	J.D.
1	A	WAS 500V	4.679	J.D.
NO.	LET.	CHARGE	DATE	BY

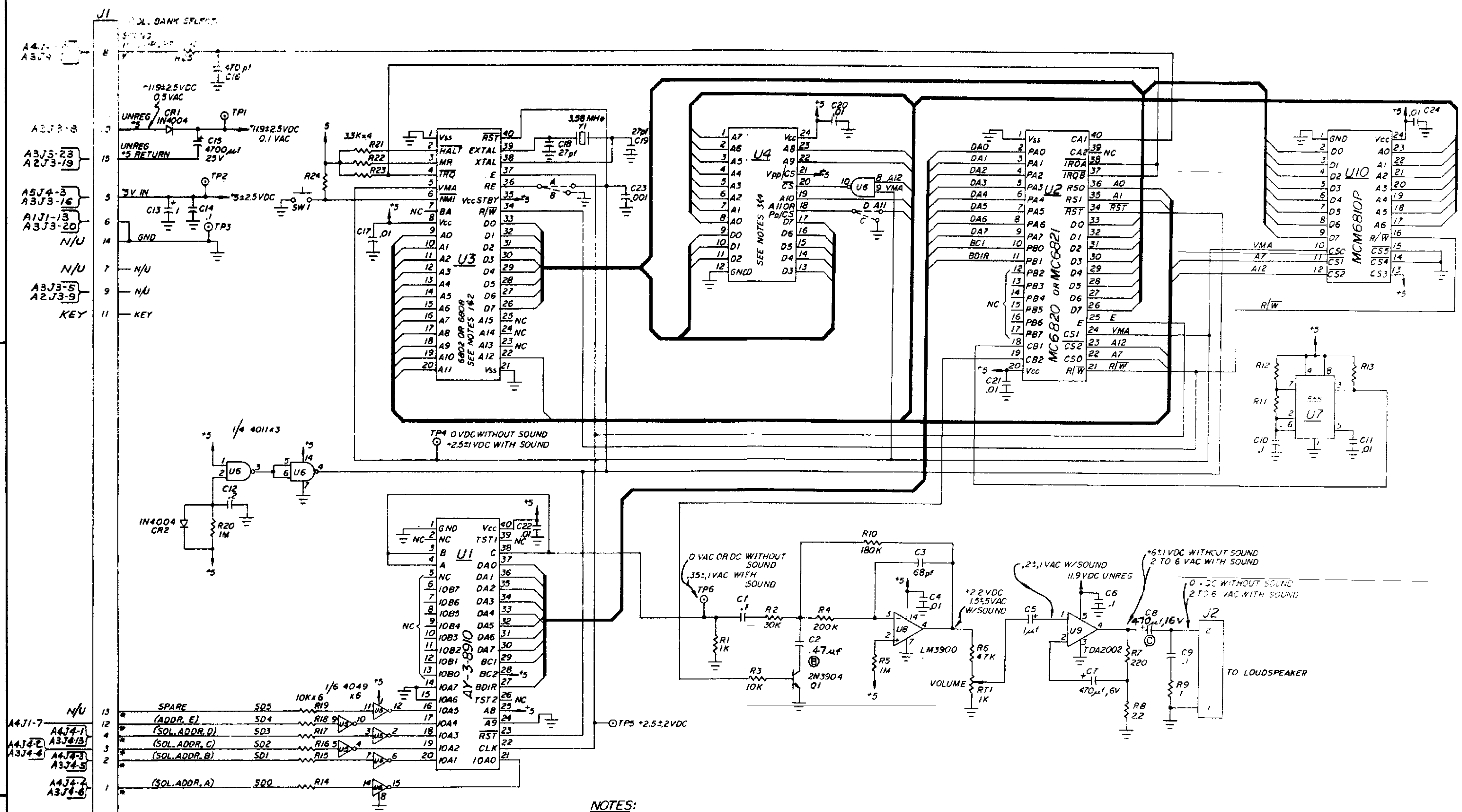


- NOTES: (CAUTION)
1. USE BALLY PART NO. E-713 FOR 115-120 VAC.
 2. USE BALLY PART NO. E-713-1 FOR 220-240 VAC.
 3. * INDICATES AID TEST POINT.

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)

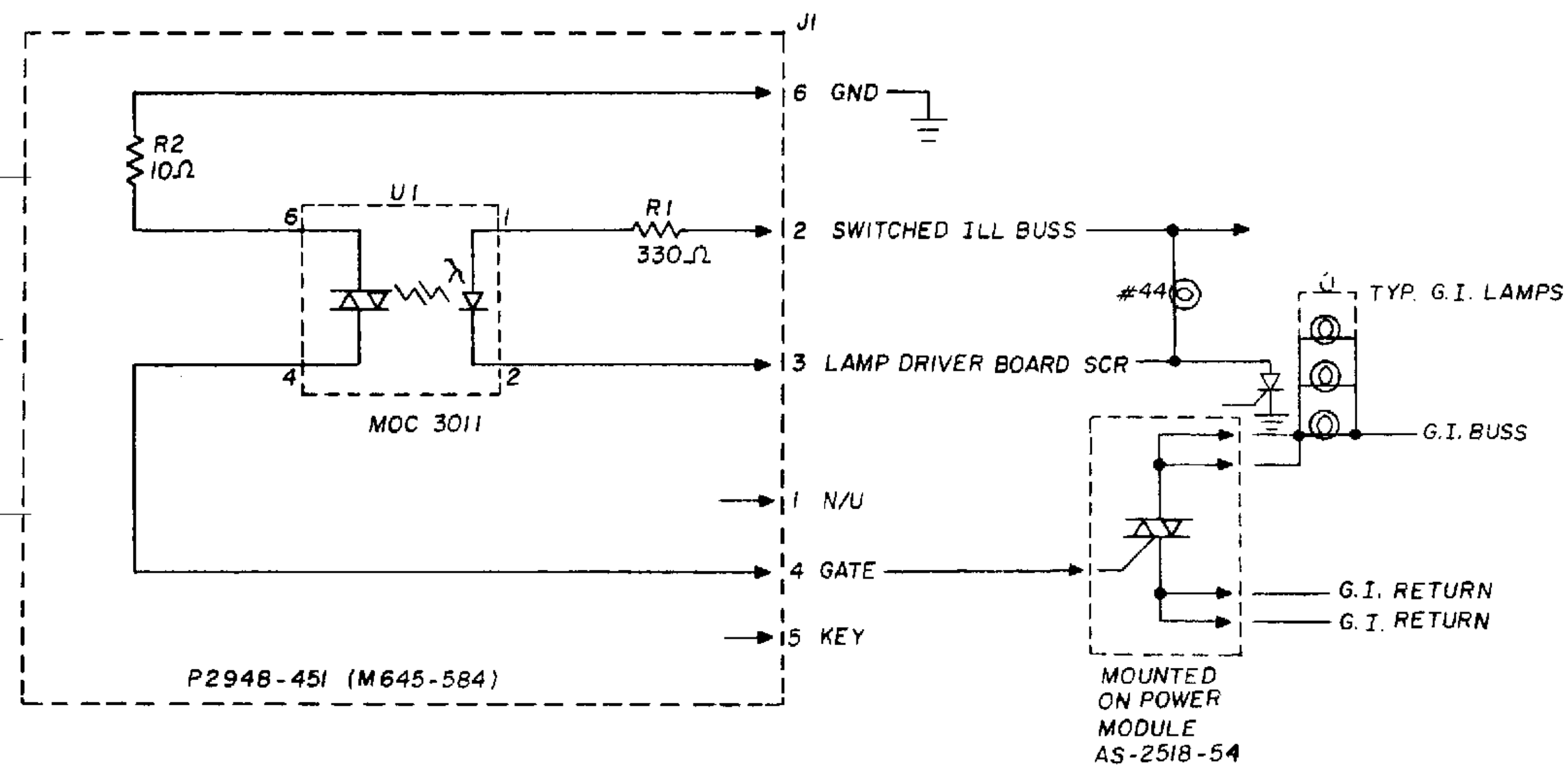
[illegible]



NOTES:

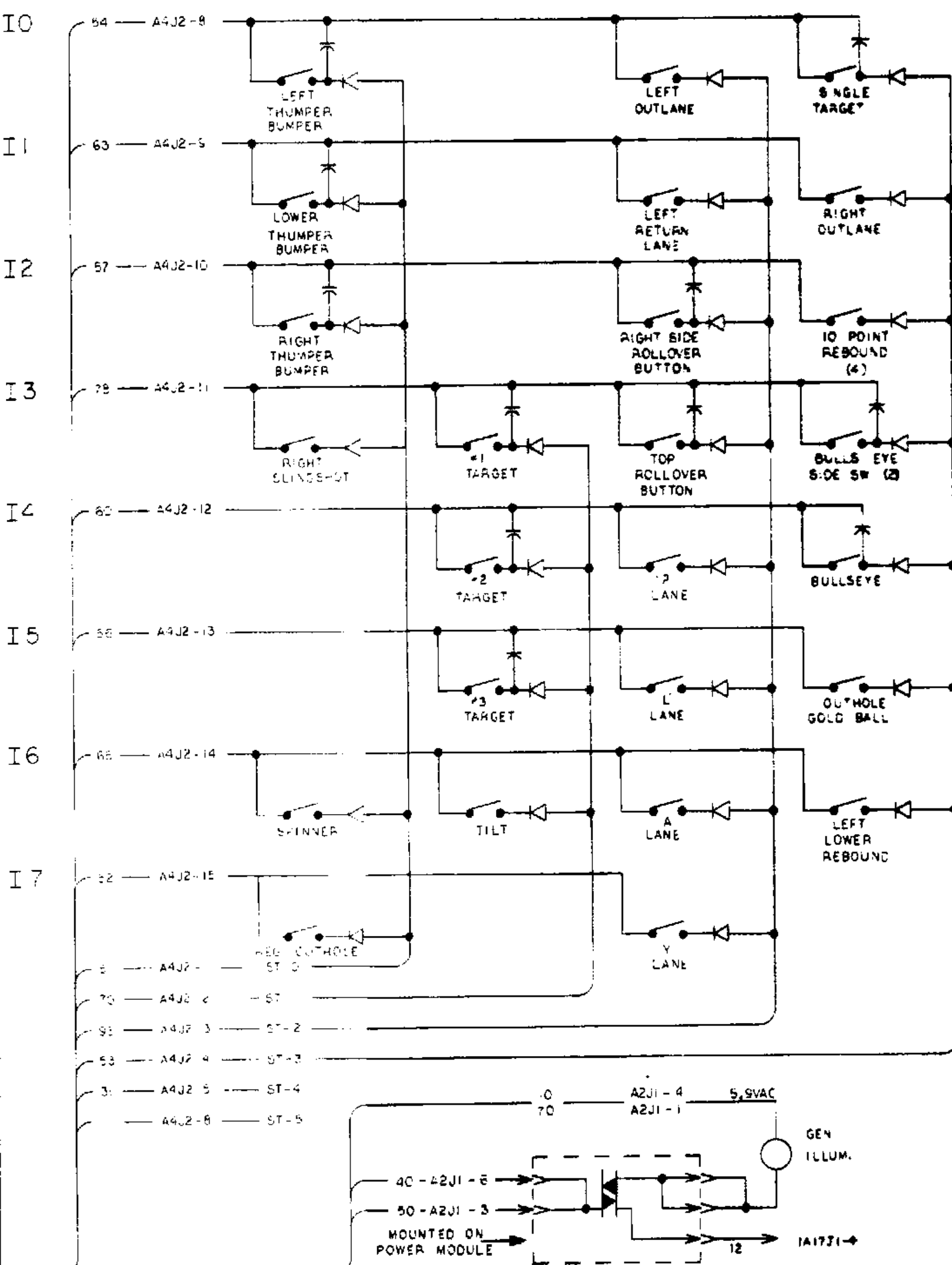
1. USE JUMPER A IF INTERNAL RAM IS USED (6802 WITHOUT U10).
2. " B " EXTERNAL " " " (6808/6810,U10).
3. " C " 2K ROM (EPROM) " " (619316B INTEL 2716 OR EQUIV.).
4. " D " 4K " " " (T1 TMS 2532 TMS 4732 OR EQUIV.).
5. U7, R12, R11, R13, C10, C11 NOT USED ON THIS ASSEMBLY.
6. UNLESS OTHERWISE INDICATED, ALL RESISTOR VALUES ARE IN OHMS, ALL CAPACITOR VALUES ARE IN MMFD'S.
7. PREFIX ALL REFERENCE DESIGNATIONS WITH AB.
8. * INDICATES 'AID' TEST POINT.

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Bally MANUFACTURING CORP. 2640 BELMONT AVENUE CHICAGO, ILLINOIS 60647	
NAME COMPUTER SOUND MODULE AB SCHEMATIC	
ASSEMBLY NO. USED 1173	
PART NO. W-1211 c	



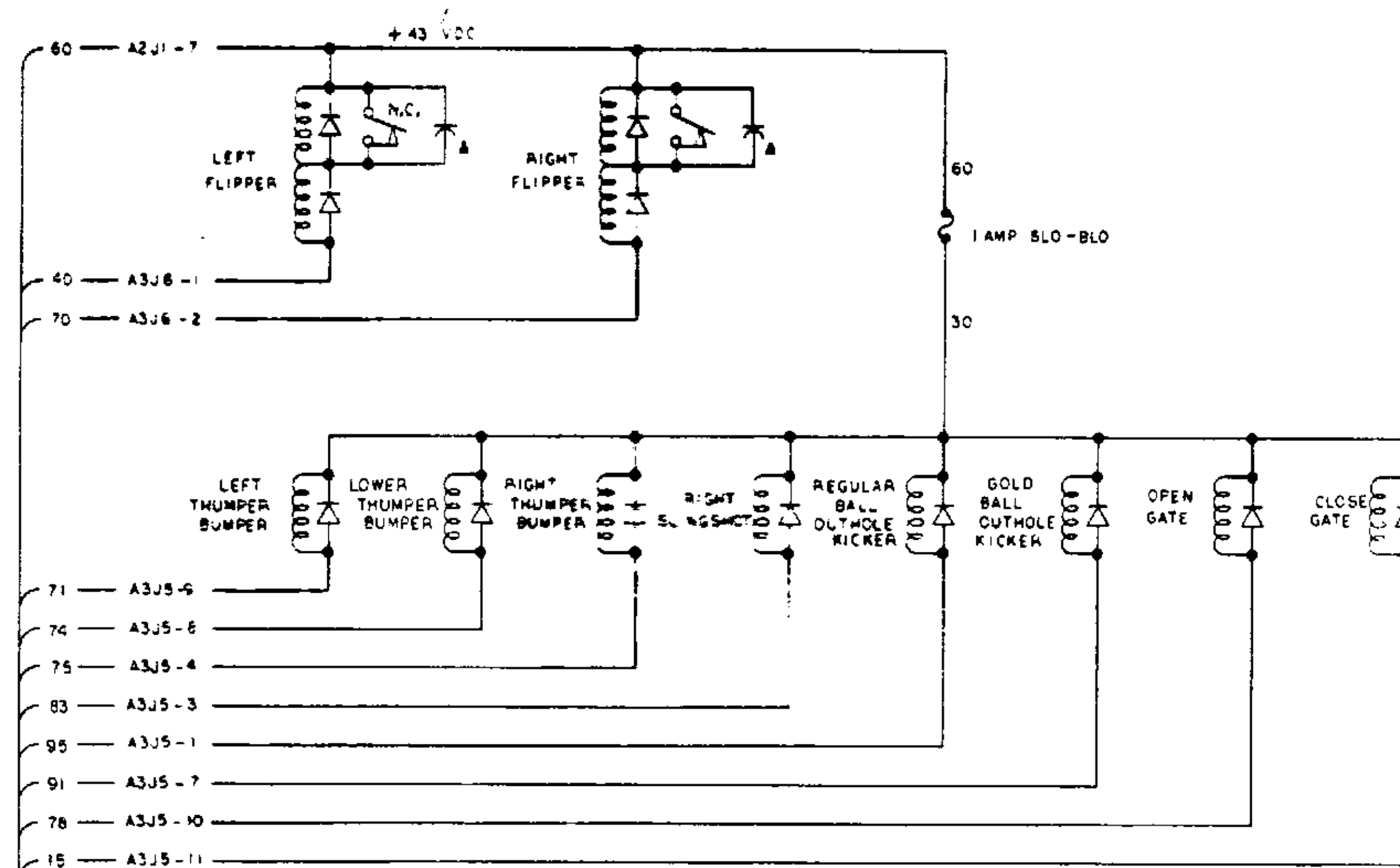
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					REMOVE ALL BURRS					DR. BY FFC		DATE 1-22-81		Bally MANUFACTURING CORP. 2640 BELMONT AVENUE CHICAGO, ILLINOIS					#1219				
					TOLERANCES ON DIMENSIONS UNLESS OTHERWISE SPECIFIED FRACTIONS $\pm .005$ DECIMALS $\pm .003$ EXCEPT HOLE DIA. S ANGLES $\pm .125^\circ$					CK. BY		DATE		PRINT CONTROL		DIE SIZE-		C.C.-		FT. PER M.-		LBS. PER M.-	
										AP'D BY EL		DATE 1-23-81											
										AP'D BY EL		DATE 1-23-81											
										FINISH: X				NAME G I FLASHER (SCHEMATIC)		ASSEM. NO. USED AS-2518-68		SCALE X					
					DO NOT SCALE DRAWING					HARDENING: X				MATERIAL X				PART NO. W-1253 b					
NO. LET. CHANGE DATE BY																							



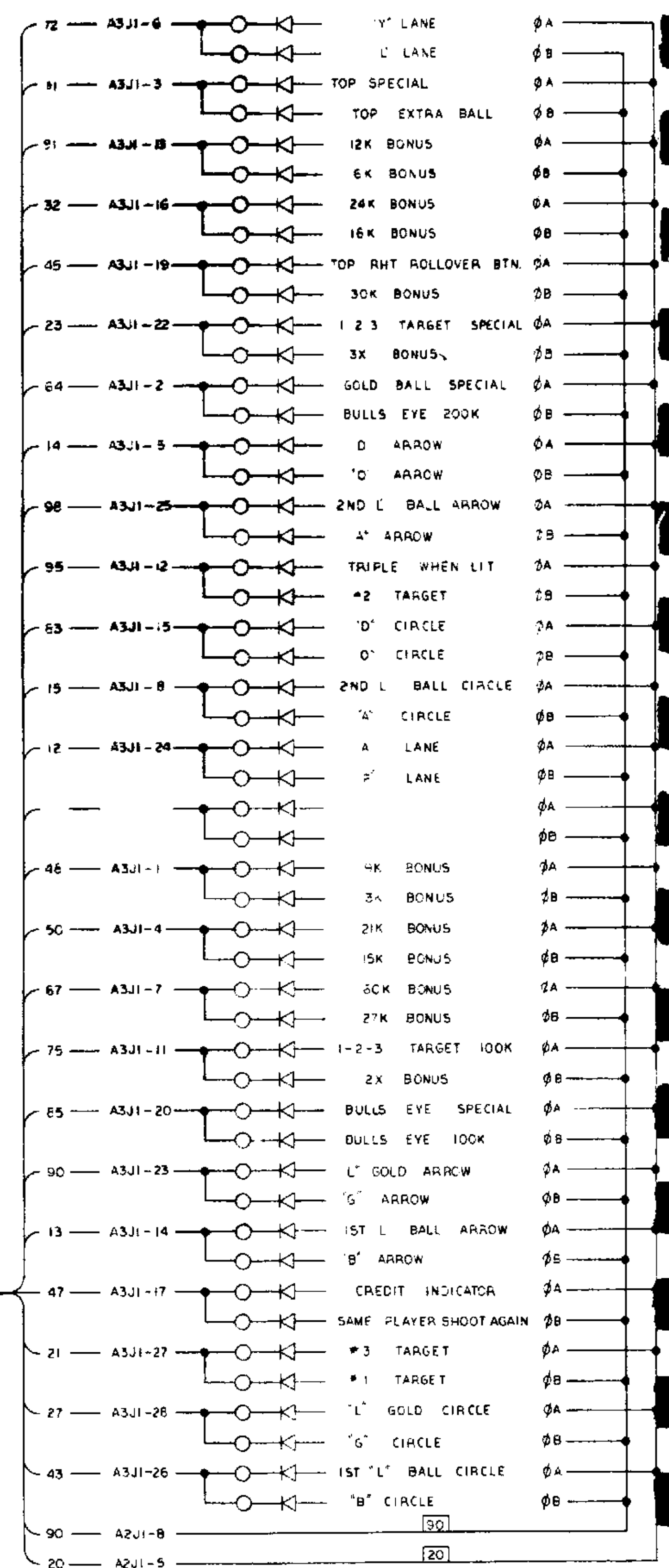
PLAYFIELD A6

- 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 IN4146 (E-587-14) ALL CAPACITORS ARE .05μF (E-586-80)
 5. * GERMANY ONLY - CAPACITOR .01μF @ 500V (E-586-65)



GOLD BALL 0371

W-1280-2



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	

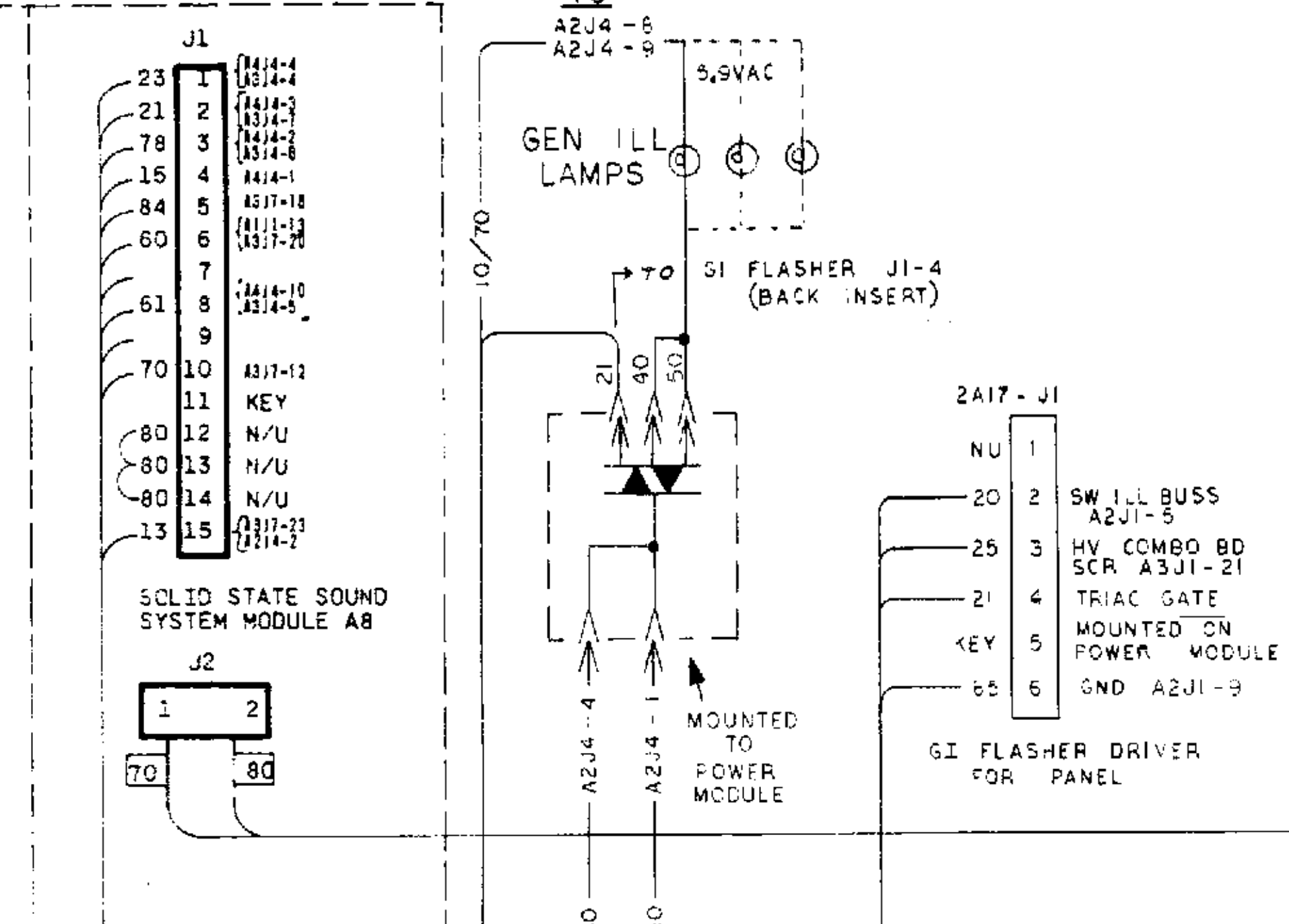
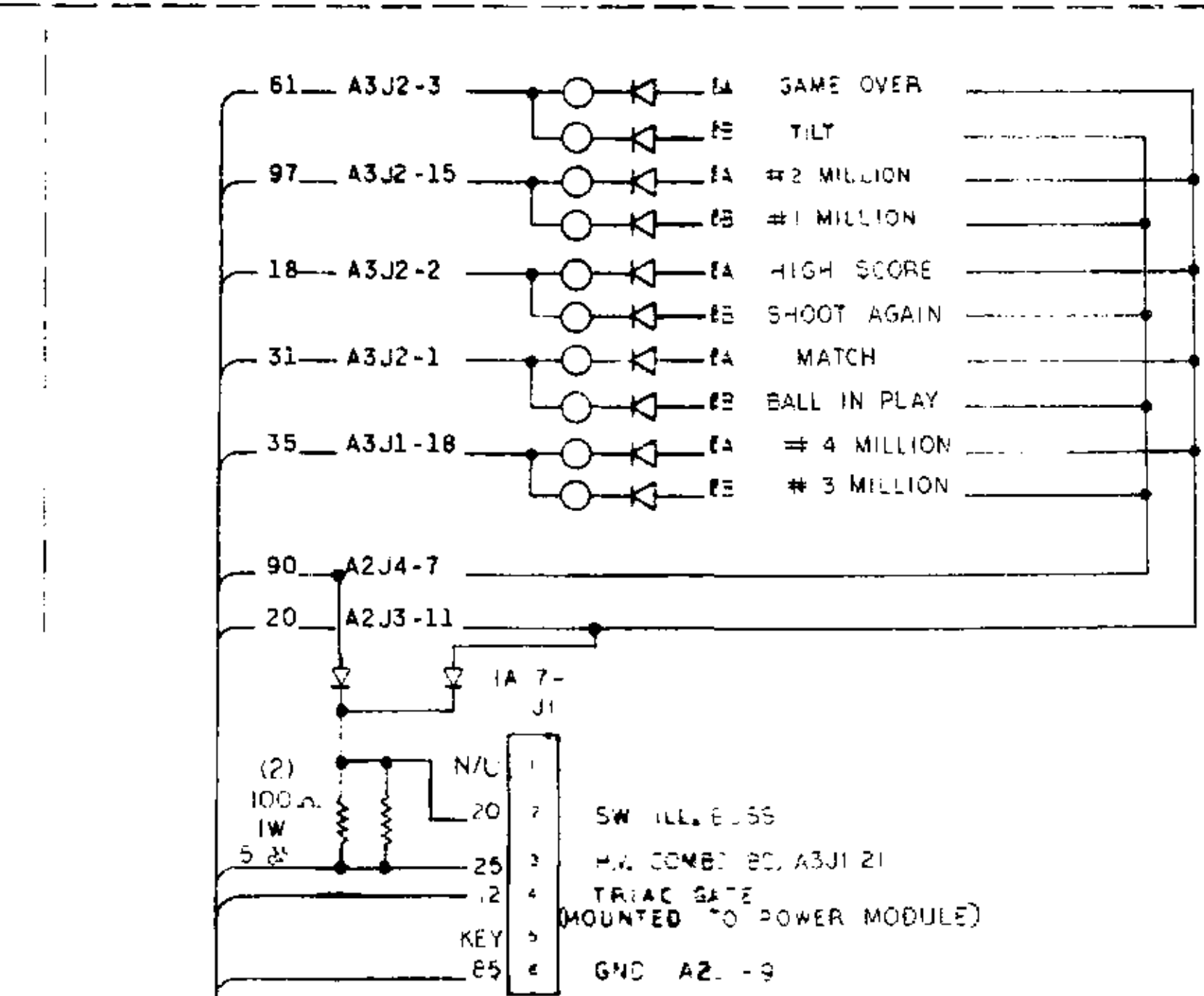
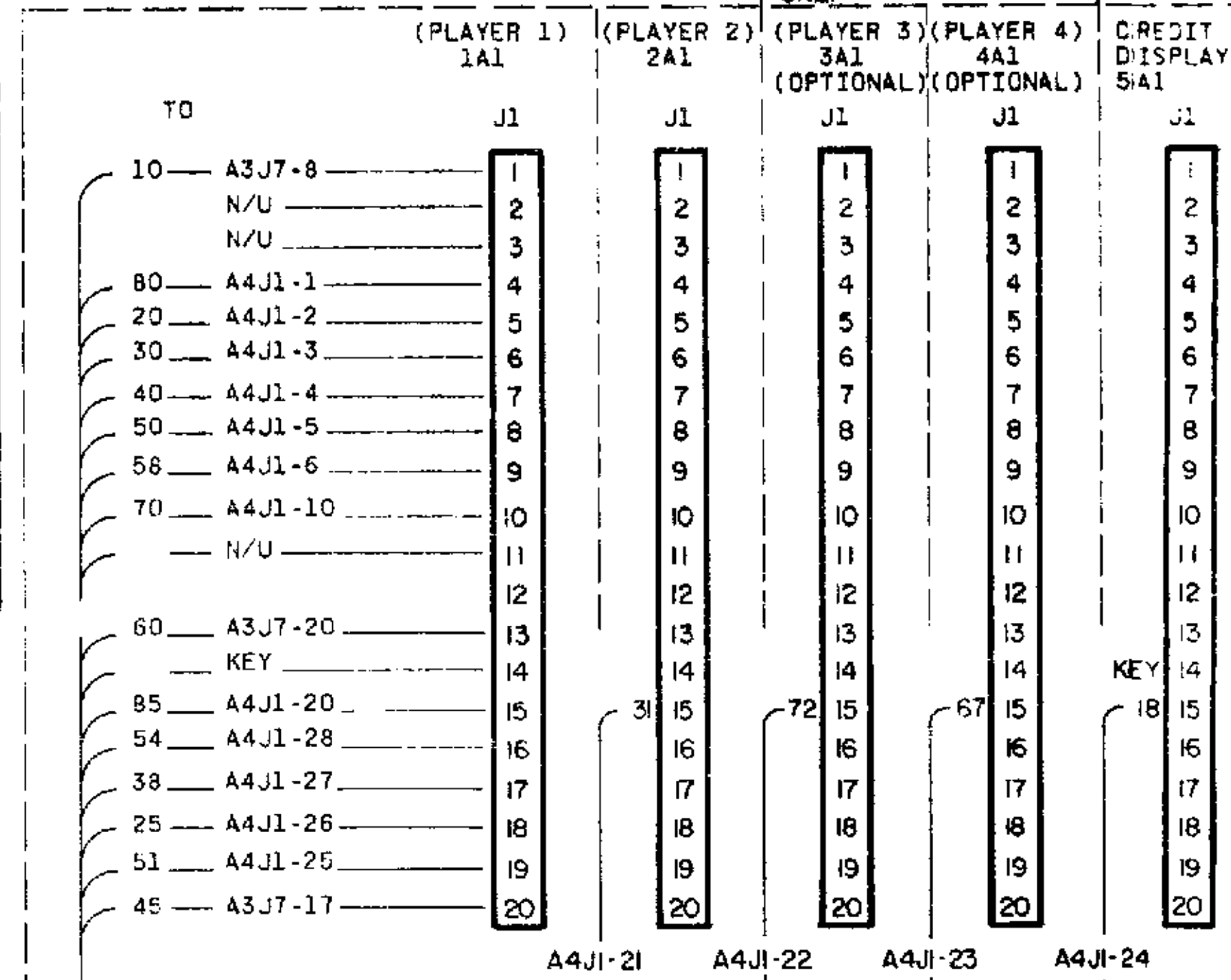
ADAPTER FOR 3rd & 4th PLAYER

15 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
A3J1-21	12	25
A2J1-9	13	85
A1J1-4	14	12
A2J1-4	15	21

INSERT TO BACK CAB

NOTE ON 4 PLAYER ONLY

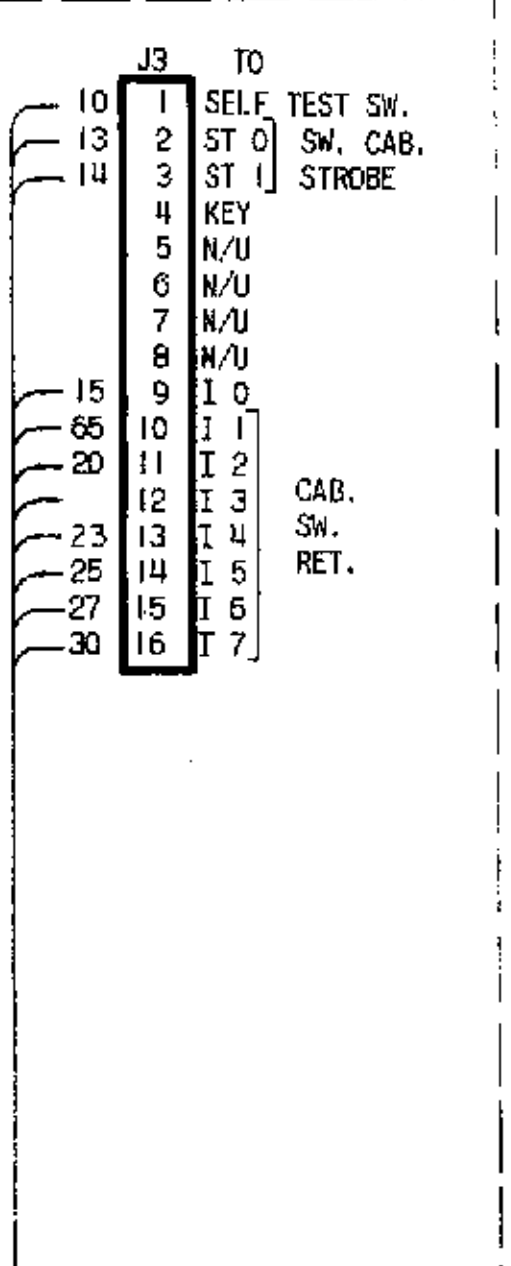
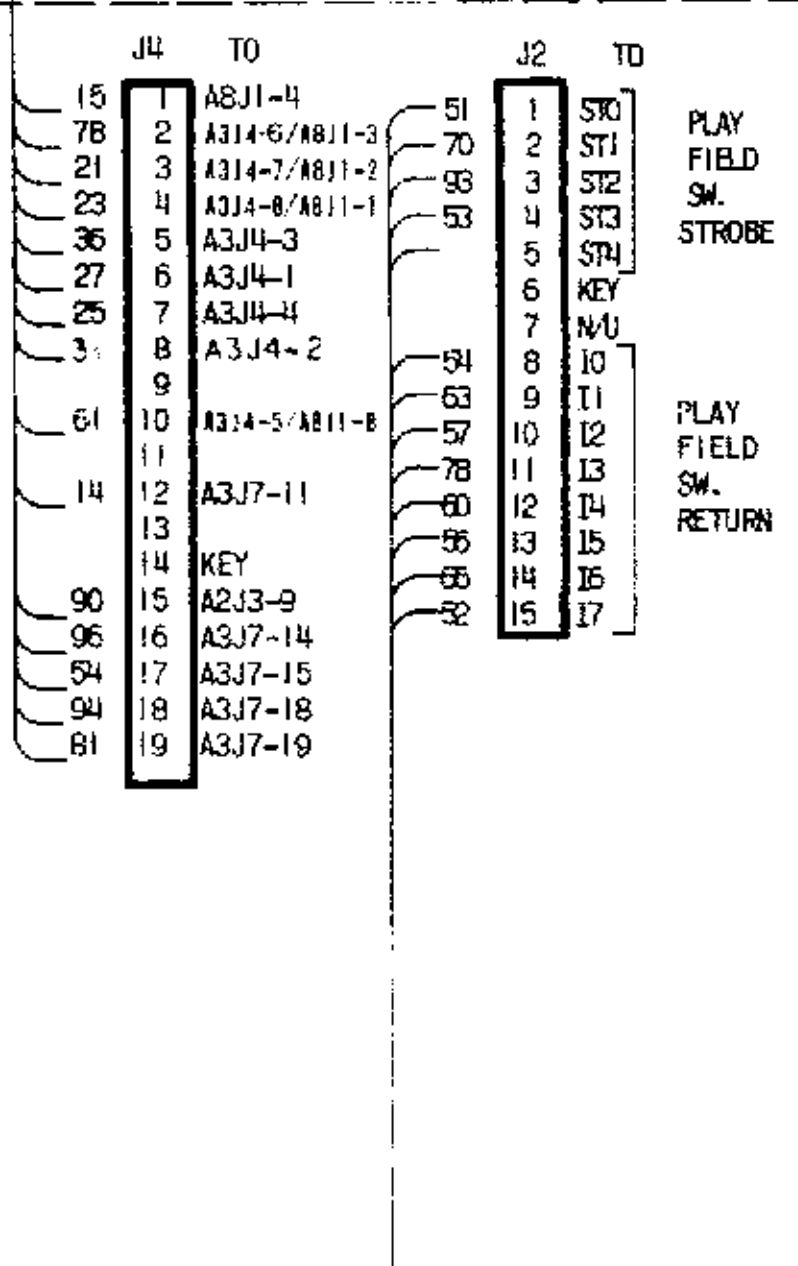
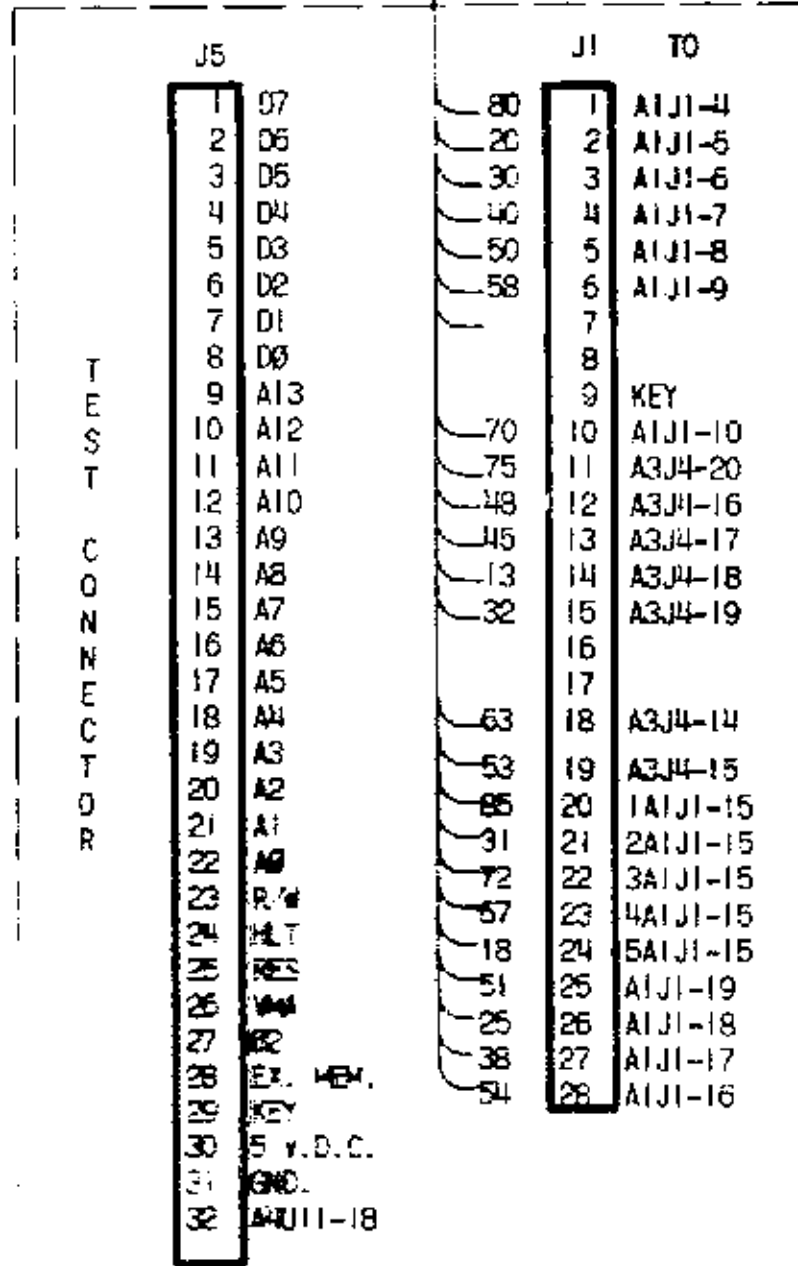
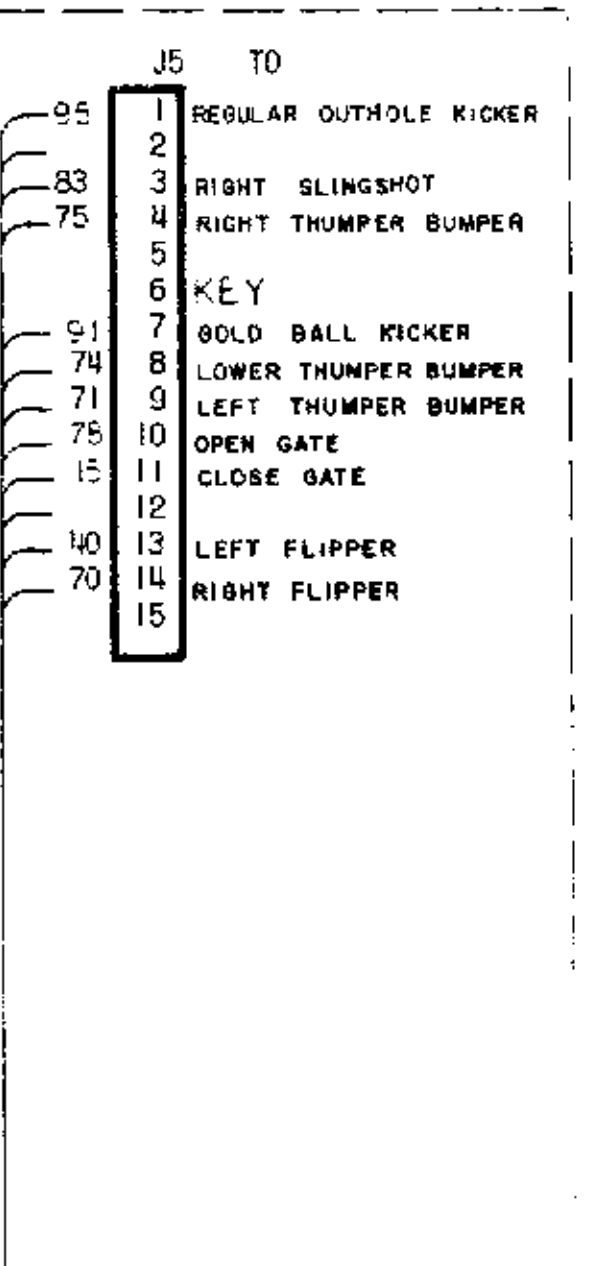
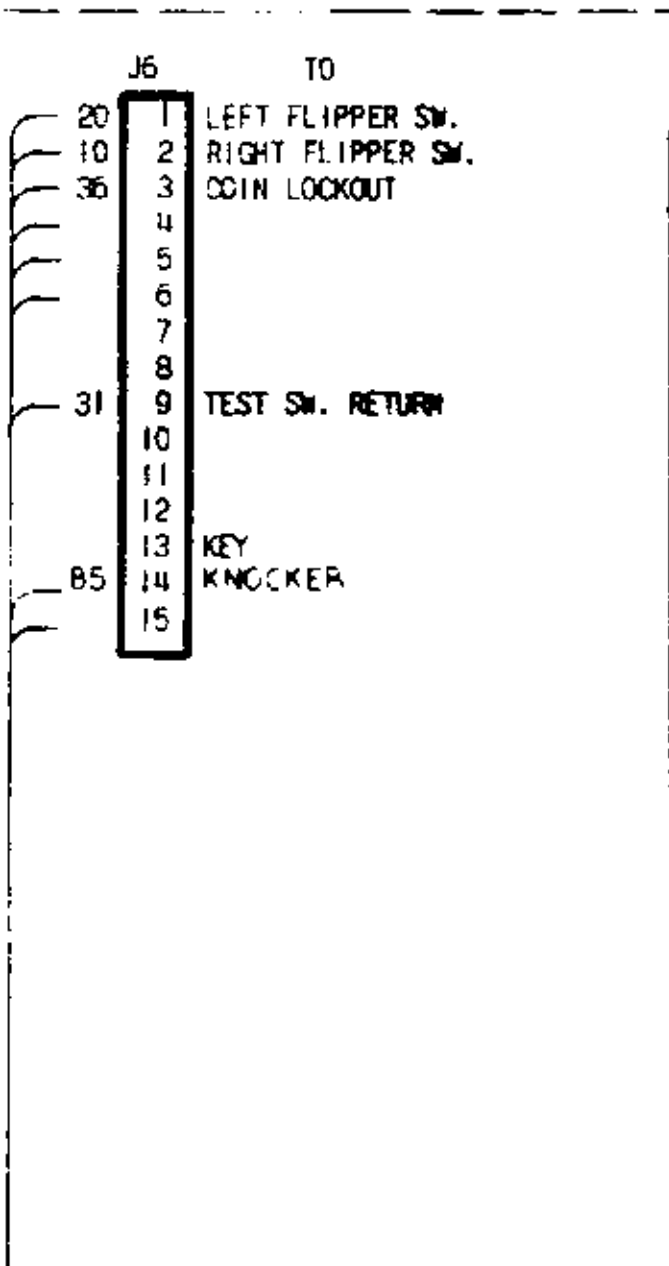
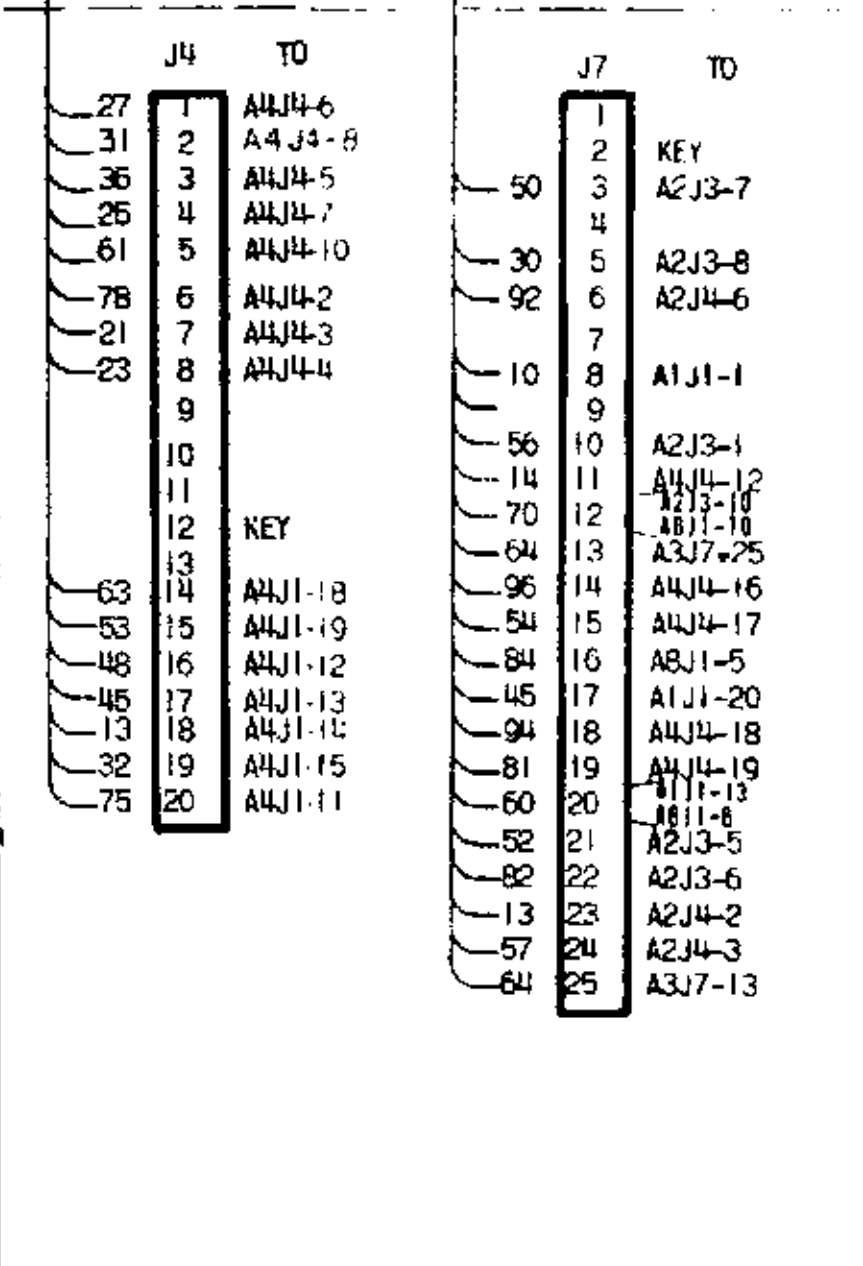
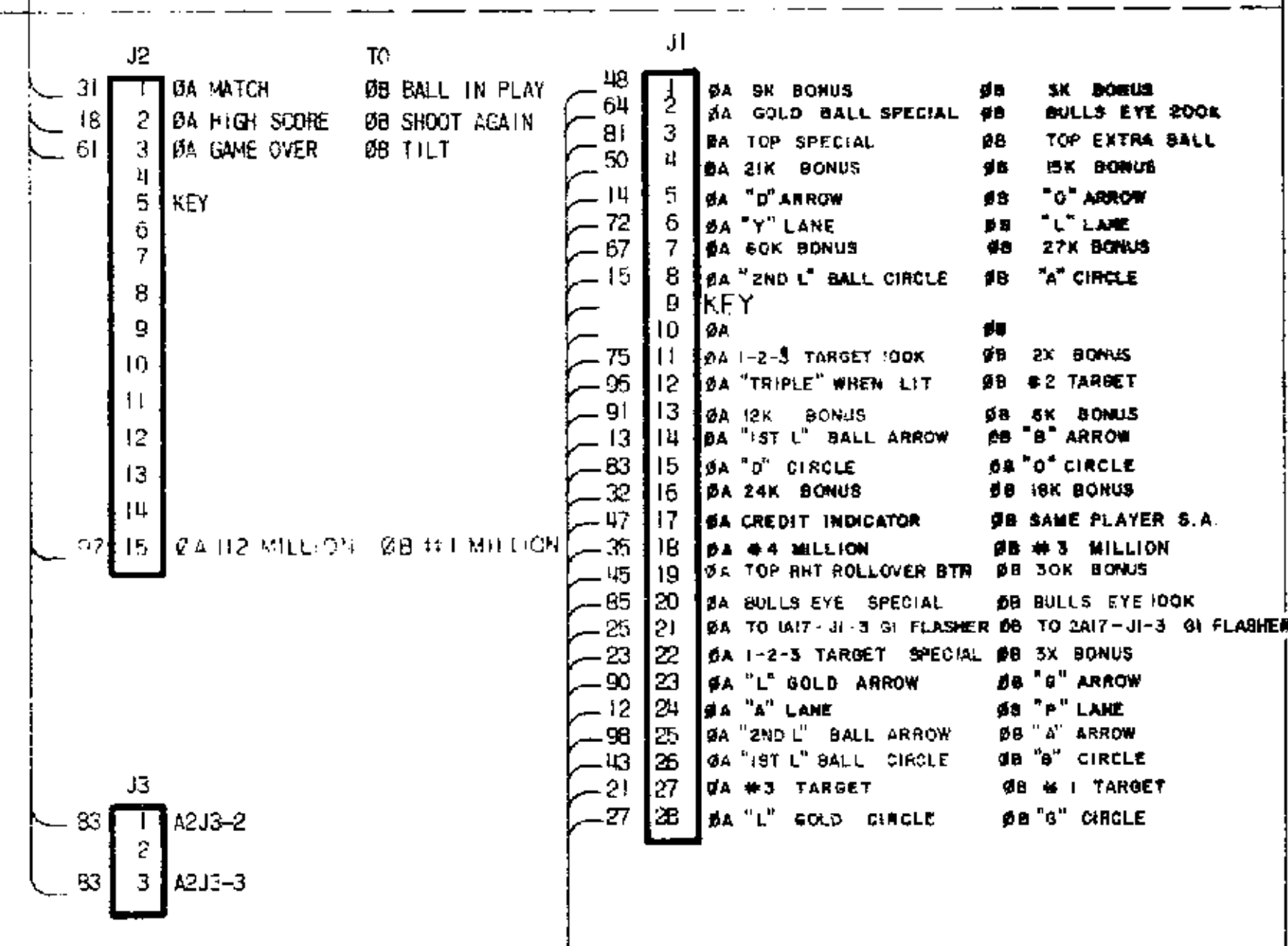
A1 INSERT



LAMP DRIVER P/O A3 (I)

VOLTAGE REGULATOR/SOLENOID DRIVER P/O A3 (I)

MPU A4 (C)



- 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 IN4148 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 TRACER

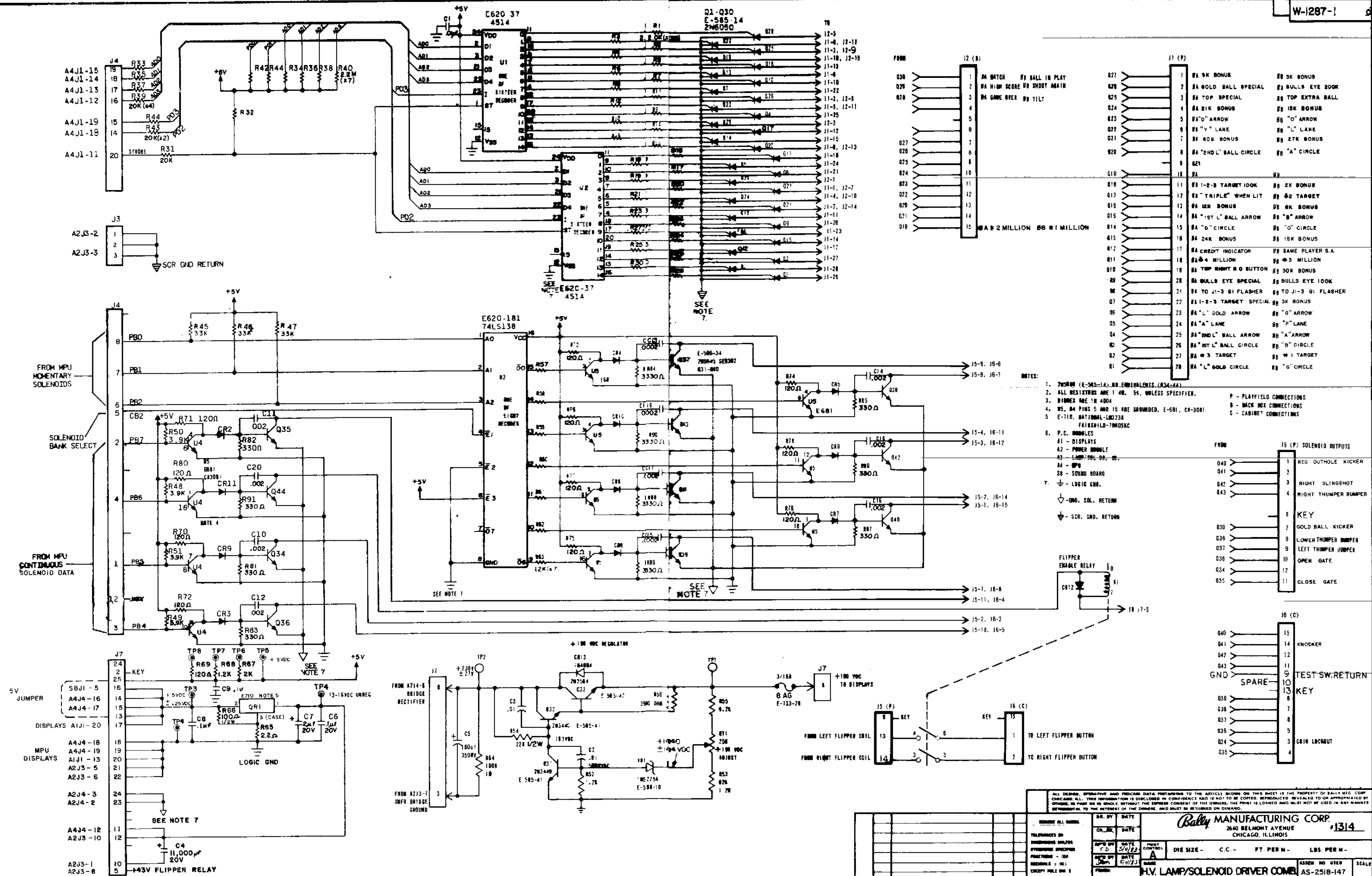
REMOVED ALL BUBBLES		DR. BY	DATE
TOLERANCES ON DIMENSIONS UNLESS OTHERWISE SPECIFIED		CK. BY	DATE
FRACTIONS = 1/16		AP'D BY	DATE
DECIMALS = 0.003		AP'D BY	DATE
EXCEPT HOLE DIA'S		NAME	
ANGLES = 1/2"		WIRING DIAGRAM BACK BOX	
DO NOT SCALE DRAWINGS		MATERIAL	
		CODE	

Bally MANUFACTURING CORP.
2640 BELMONT AVENUE
CHICAGO, ILLINOIS

ASSEMB NO. USED

PART NO. W-1282-2

OPER.	DEPT.	DESCRIPTION	TOOL No.
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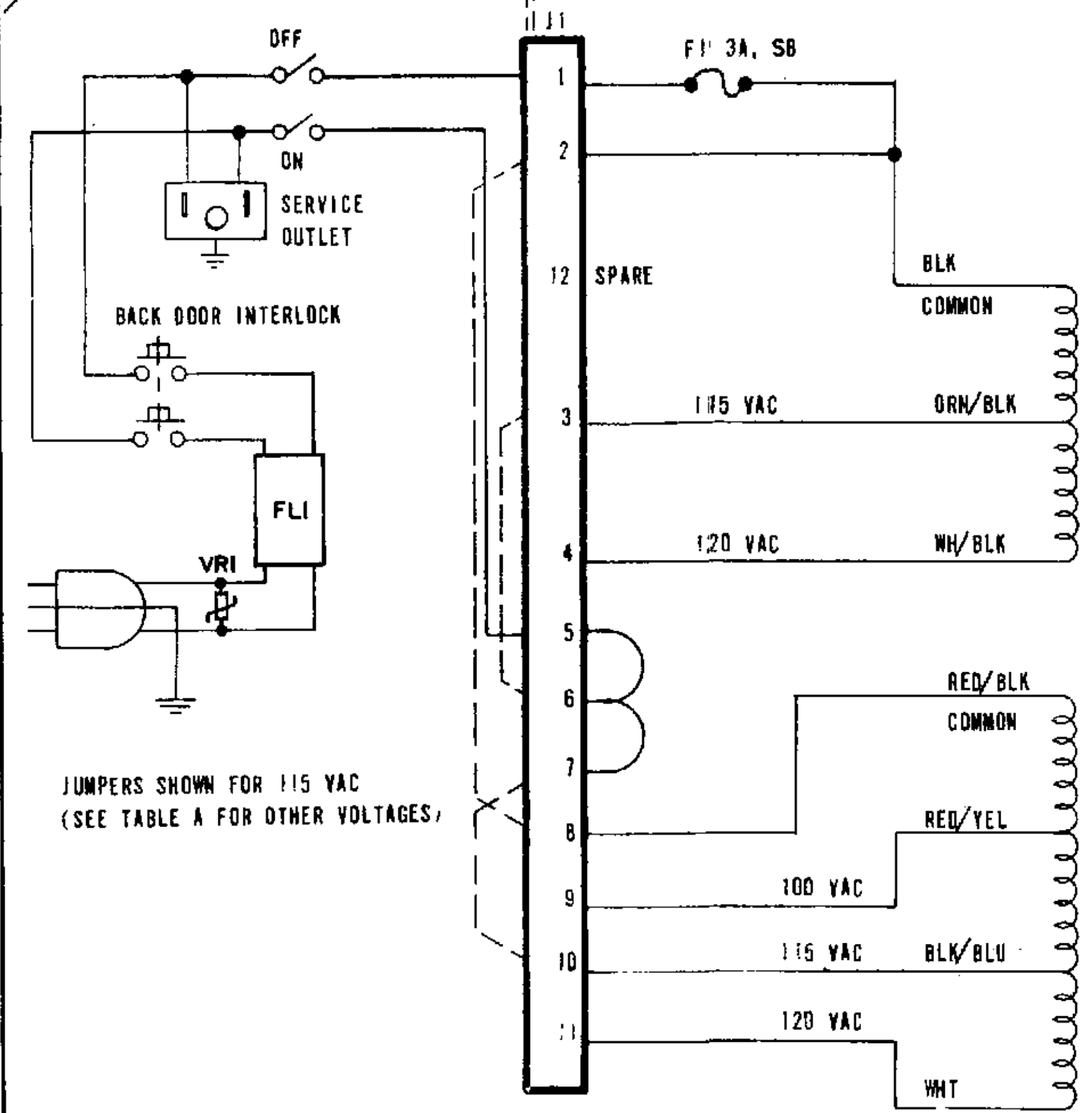


AS-2877-13 TRANSFORMER POWER ASSEMBLY

AS-2518-151 POWER MODULE

AS-3071 15 TRANSFORMER ASSEMBLY

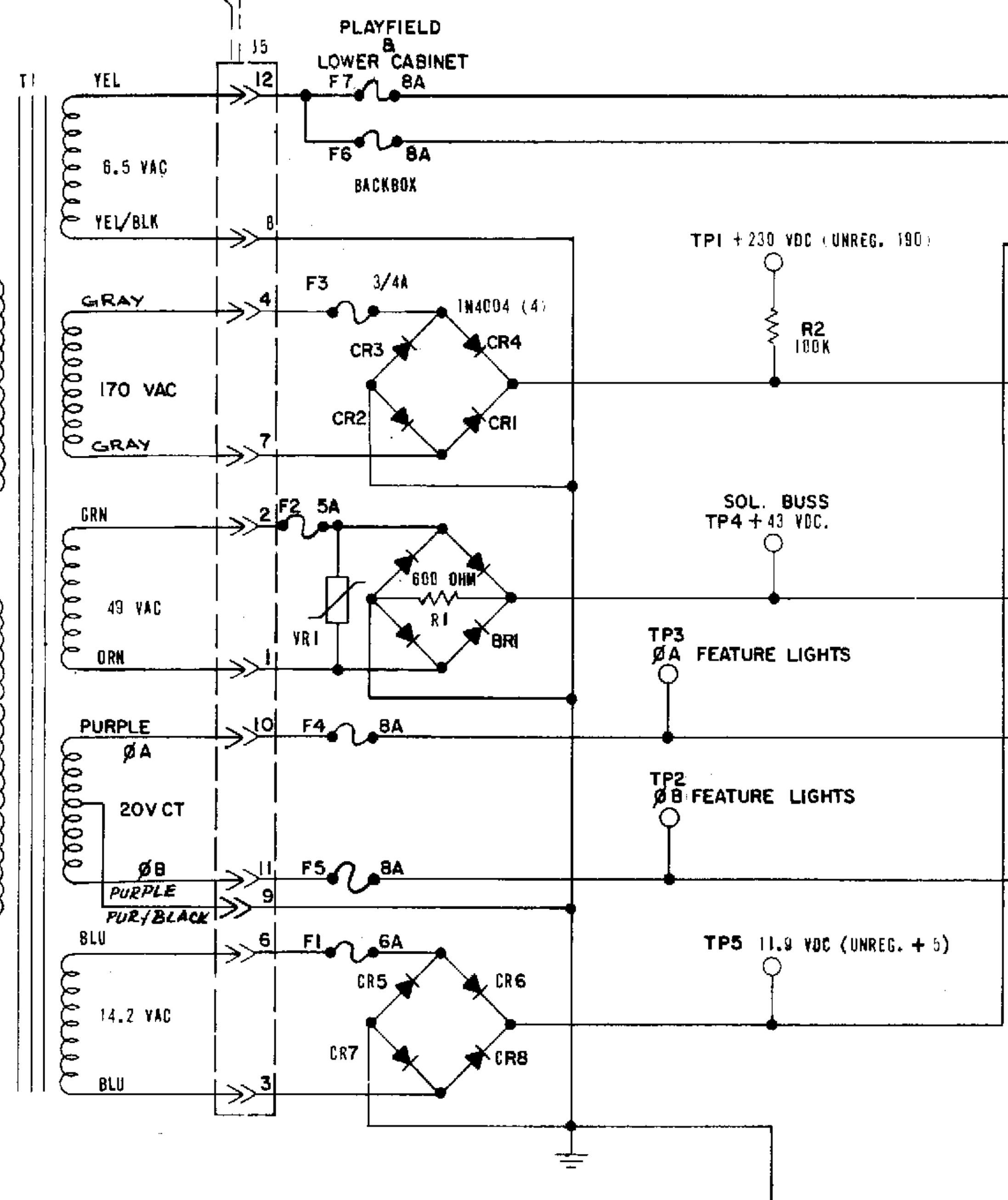
CABINET WIRING



JUMPERS SHOWN FOR 115 VAC
(SEE TABLE A FOR OTHER VOLTAGES)

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



- 13 (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
- 14 (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
- 12 (LOWER CABINET)
 - 1 POWER LINE GND
 - 2 FLIP SW. RETURN
 - 3 GEN. ILL. RETURN
 - 4 SOLENOID BUS, +43
 - 5 SPARE
 - 6 GEN. ILL. BUS
- 11 (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

ALL DESIGN, OPERATIVE AND PROCESS DATA PERTAINING TO THE ARTICLE SHOWN ON THIS SHEET IS THE PROPERTY OF BALLY MFG. CORP. CHICAGO, ILL. THIS INFORMATION IS DISCLOSED IN CONFIDENCE AND IS NOT TO BE COPIED, REPRODUCED, REVEALED TO OR APPROPRIATED BY OTHERS, IN PART OR IN WHOLE, WITHOUT THE EXPRESS CONSENT OF THE OWNERS. THE PRINT IS LOANED AND MUST NOT BE USED IN ANY MANNER DETRIMENTAL TO THE INTEREST OF THE OWNERS, AND MUST BE RETURNED ON DEMAND.

NO.	LET.	CHANGE	DATE	BY

REMOVE ALL BURRS	DR. BY JSG	DATE 2-2-83	Bally MANUFACTURING CORP. 2640 BELMONT AVENUE CHICAGO, ILLINOIS 1311	
TOLERANCES ON DIMENSIONS UNLESS OTHERWISE SPECIFIED FRACTIONS ± .008 DECIMALS ± .003 EXCEPT HOLE DIA'S ANGLES ± 1/2°	CK BY [Signature]	DATE		
DO NOT SCALE DRAWING	AP'D BY [Signature]	DATE 2-9-83	PRINT CONTROL A	NAME
MATERIAL GRAND SLAM			ASSEM. NO. USED AS-2518-151	
CODE			PART NO. W-1288	

OPER.	DEPT.	DESCRIPTION	TOOL NO.

PLAYFIELD MYLAR PROTECTORS

FO-589

ENCLOSED ARE TWO MYLAR PROTECTORS WHICH MAY BE ATTACHED TO THE PLAYFIELD IN FRONT OF THE SLINGSHOT KICKERS AS SHOWN IN SKETCH. THESE WILL HELP TO PRESERVE PAINT FINISH IN FRONT OF SLINGSHOTS.

TO APPLY, SIMPLY REMOVE PAPER BACKING AND PLACE MYLAR WITH FLAT EDGE TOUCHING THE TWO SLINGSHOT POSTS.

