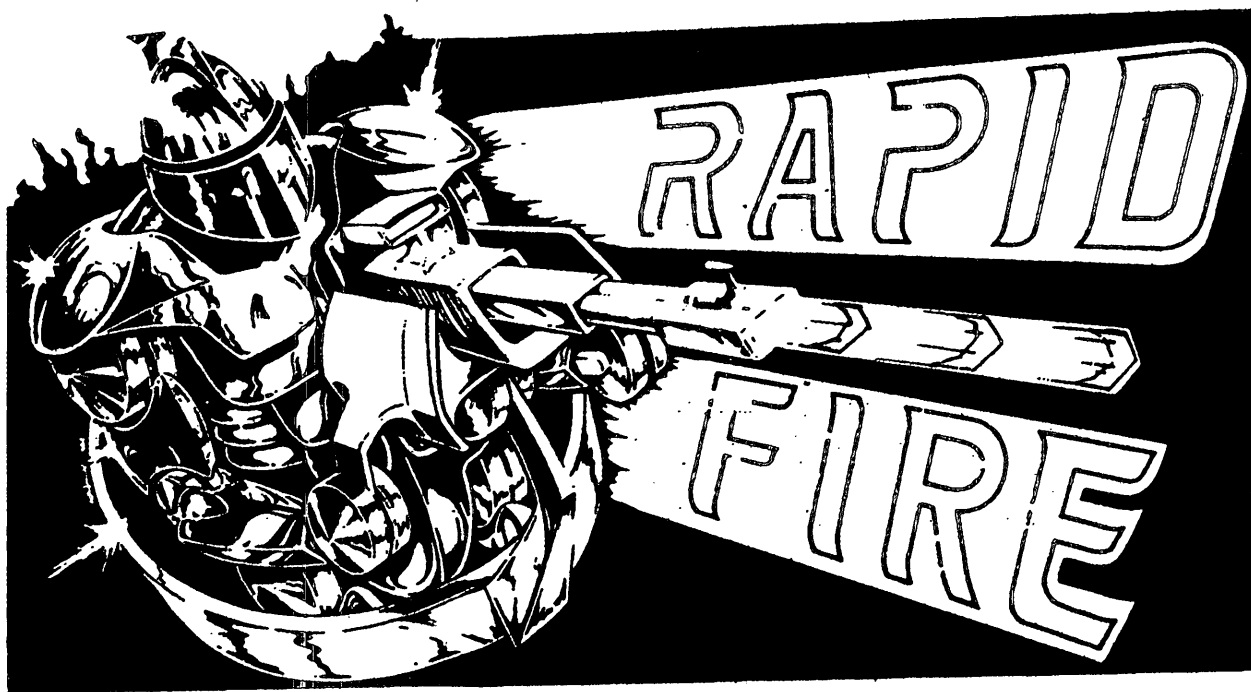


For service in the continental United States,
call toll free: (800)-323-3555;
in Illinois call: 312-860-6400.

GAME 1282
FO 734

Bally[®]



Bally[®]

PINBALL DIVISION

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WARNING: THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTIONS MANUAL, MAY CAUSE INTERFERENCE TO RADIO COMMUNICATIONS. AS TEMPORARILY PERMITTED BY REGULATION IT HAS NOT BEEN TESTED FOR COMPLIANCE TO SUBPART J OF PART 15 OF FCC RULES; WHICH ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST SUCH INTERFERENCE. OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE INTERFERENCE IN WHICH CASE THE USER AT HIS OWN EXPENSE WILL BE REQUIRED TO TAKE WHATEVER MEASURES MAY BE REQUIRED TO CORRECT THE INTERFERENCE.

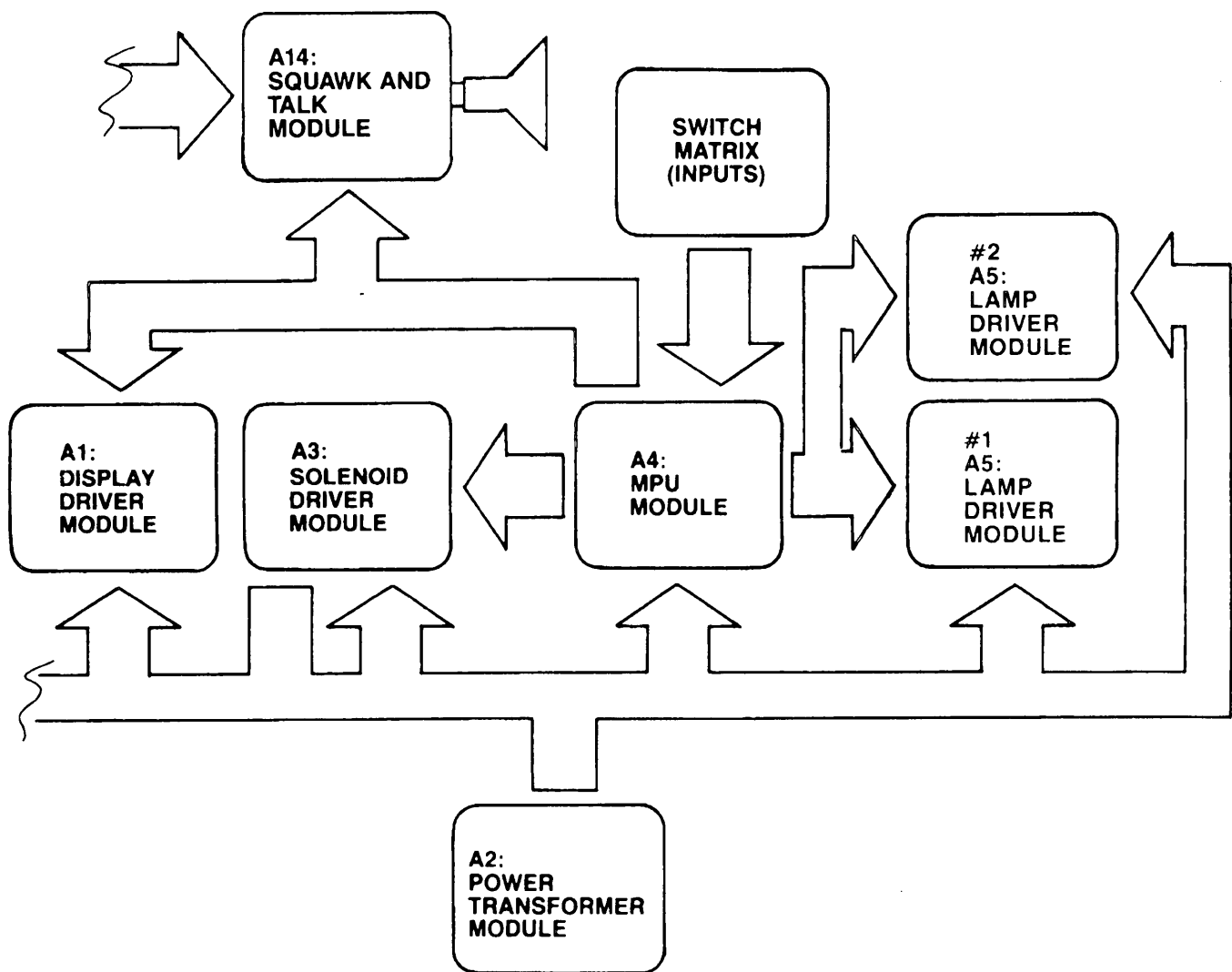
Installation and General Game Operation Instructions

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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 hinge 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 slam switches) may go out of adjustment.

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) slam switches:

1. Panel slam on bottom of playfield panel.
2. Ball slam on side of cabinet. Insert the smaller ball (15/16" dia.) into the ball slam assembly, and adjust the bracket so the ball will roll free to contact the switch blade, if front of cabinet is raised.

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

A20 AUX POWER MODULE AS-3200

SEE W 1186-19

100 VAC, J1-1 & J1-4
115 VAC, J1-1 & J1-5
120 VAC, J1-1 & J1-6
220 VAC, J1-1 & J1-7
240 VAC, J1-1 & J1-8

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

GENERAL GAME OPERATION

Place balls in lower playfield.

Coin game. Coin should be rejected. Plug in line cord. Move power ON-OFF master switch at the bottom right front corner of the cabinet to "ON" position. The game will play a power-up sound to announce game readiness. Scores are set to zero, alternating with the high 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 enter one player into play. One player is posted each additional time the credit button is pressed.

Pressing the credit button initiates play.

The game awards all points earned by the player.

The player up advances each time a base station is destroyed. Then continues until all base stations are destroyed.

Slamming the game 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 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. 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 Bases/Ball in Play window as follows:

- 05— 00 to— 40 = Current Credits
- *06— 100000 to—99999 = Total Plays
- *07— 10000 to—99999 = Not Used
- 08— 00 to—99999 = Not Used
- 09— 00 to—99999 = Not Used
- 10— 10000 to—99999 = Coins Dropped thru Coin Chute #1
- 11— 10000 to—99999 = Not Used
- 12— 10000 to—99999 = Coins Dropped thru Coin Chute #3**
- 13— 00 to—99999 = Not Used
- 14— 00 to—99999 = Number of minutes of Game Play
- 15— 00 to—99999 = Number of Service Credit

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 'Bases/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 (positions 05 thru 15) 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 game comes to Game Over position.

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 'Base/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.

#1282 RAPID FIRE

FEATURE OPERATION & SCORING

INVADER FEATURE (RED)

The Invader Feature consists of two groups of twenty four (24) lights and eight targets.

The lights will be identified in the following manner. Column number first then row; example 1.1, 4.6 etc.

The idea of this feature is for the "Invaders" to load their "Ships." This is accomplished by the lights descending to their two "Ships." Four entries into a "Ship" will activate that ship to fire upon your "Base Station." A shot which gets past your "Force Field" will destroy your "Base Station."

The player would ward off the attack by shooting the "Invader" targets which would kill an "Invader" in that column. As a wave is killed the following wave starts at a faster rate.

Any "Invaders" that make it to the "Ships" would restart at the top of its column except flashing. It will wait there until all other Invaders are killed. At that time the Flashing Invaders will come down in a fast side to side descending pattern.

SNEAK ATTACK FEATURE (GREEN)

This feature consists of one target and eight (8) lights down the center of the playfield. The attack starts at the top of the playfield and descends at a very fast rate.

A shot at its target only stops the attack, it does not destroy the attack. The missile is destroyed by pushing back the attack out the back of the playfield, this is accomplished by multiple shots, each shot moving the attack back on position.

If the attack is not destroyed it will restart at its present position.

TANK FEATURE (BLUE)

This feature consists of two separate attacks, the left tanks and the right tank. The tanks start at the top of the game and descend automatically when they reach their bottom position they fire at the Base Station. A shot which gets past your Force Field destroys your Base Station.

Shots from your Base Station will move the Tanks back one position. A shot from a Laser Cannon will destroy that tank.

FORCE FIELD (WHITE)

The Force Field feature consists of nine (9) white lights at the bottom of the playfield one light is lit at all times. This light is moved by the button in the hand controls to block oncoming shots. An offensive shot may be taken from a lit position.

START OF GAME SETTINGS

SW. #6

ON 2 Panic Buttons

OFF 1 Panic Button

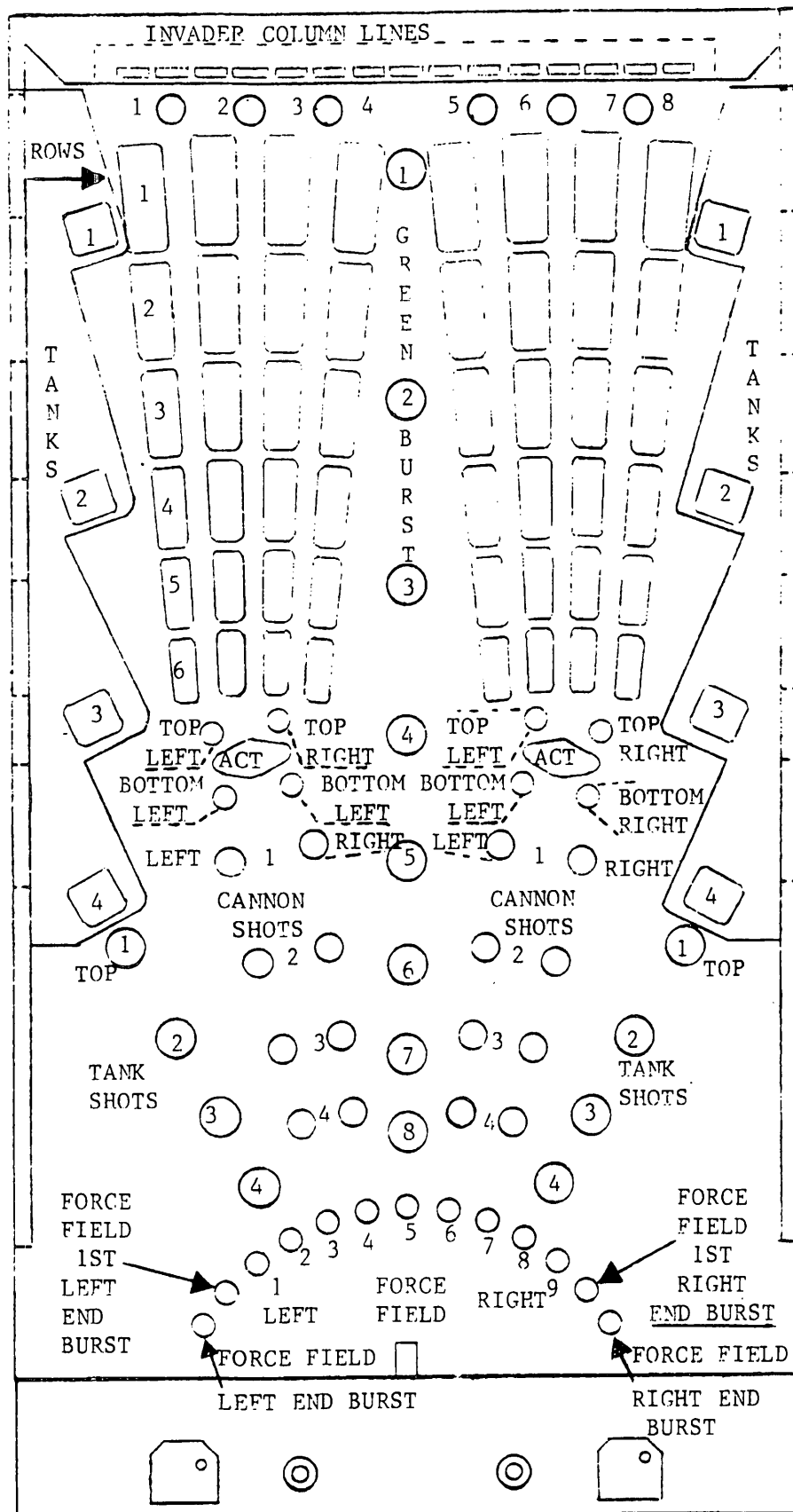
SW. #7

ON 4 Laser Cannons

OFF 2 Laser Cannons

Threshold Laser Cannon Awards SW. #14 & #15

#14 #15



LITE
LOCATION
CHART

V. GAME ADJUSTMENTS

A. 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. Credits per coin, credit display, and baser per game, 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	TOTAL CREDITS/COINS
#1 (HINGE SIDE)	5	4	3	2	1						
OR #3	13	12	11	10	9						

MAXIMUM CREDITS: 15 NONADJUSTABLE

BASES PER GAME:	# BASES/GAME	SWITCHES	32	31
	4		ON	ON
	3		ON	OFF
	2		OFF	OFF
	1		OFF	ON

CREDIT DISPLAY:	CREDITS DISPLAYED	SWITCH 27
	YES	ON
	NO	OFF

HIGH SCORE FEATURE:

The game is designed to award a laser shot, panic button and base station. See Front Door Game Adjustments.

HIGH SCORE TO DATE OR OVER 10,000,000 SCORE FEATURE:

The game is designed to show the high score to date only. Each time this happens, the winning score becomes the new high score to beat. This score is displayed on 2 player score displays at the end of each game as an incentive to play.

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.

GAME FEATURE OPTIONS

Panic button display adjustment:

Liberal	SW. 6 ON	2 at start of game.
Conservative	SW. 6 OFF	1 at start of game.

Laser cannon force field orange burst lites adjustment:

Liberal	SW. 7 ON	2 left and right burst lites will be on at start of game.
Conservative	SW. 7 OFF	Only 2 left burst lites will be on at start of game.

Laser cannon lites shot adjustment:

Liberal	SW. 8 ON	Stopping offensive shot does not take any orange burst lites out.
Conservative	SW. 8 OFF	Stopping offensive shot also removes 1 orange burst lite.

Laser cannon threshold score adjustment:

Liberal	SW. 14, 15 ON	Adds 4 orange burst lites.
Medium	SW. 14 OFF, 15 ON	Adds 3 orange burst lites.
Semi-Medium	SW. 14 ON, 15 OFF	Adds 2 orange burst lites.
Conservative	SW. 14, 15 OFF	Adds 1 orange burst lite.

Set of 4 Invaders recall adjustment:

Liberal	SW. 16 ON	Knocking out sets of Invaders will recall each set knocked out for next base.
Conservative	SW. 16 OFF	Knocking out sets of Invaders will not recall for next base.

FRONT DOOR GAME ADJUSTMENTS

High Score Feature Adjustments:

The game is designed to award Laser Cannons Panic Buttons and Base Stations at each of three score levels. The recommended levels are on the score card in the game.

Any level from 50,000 to 9,950,000 can be set as desired. It is also possible to reset (00) any or all of the levels, if desired.

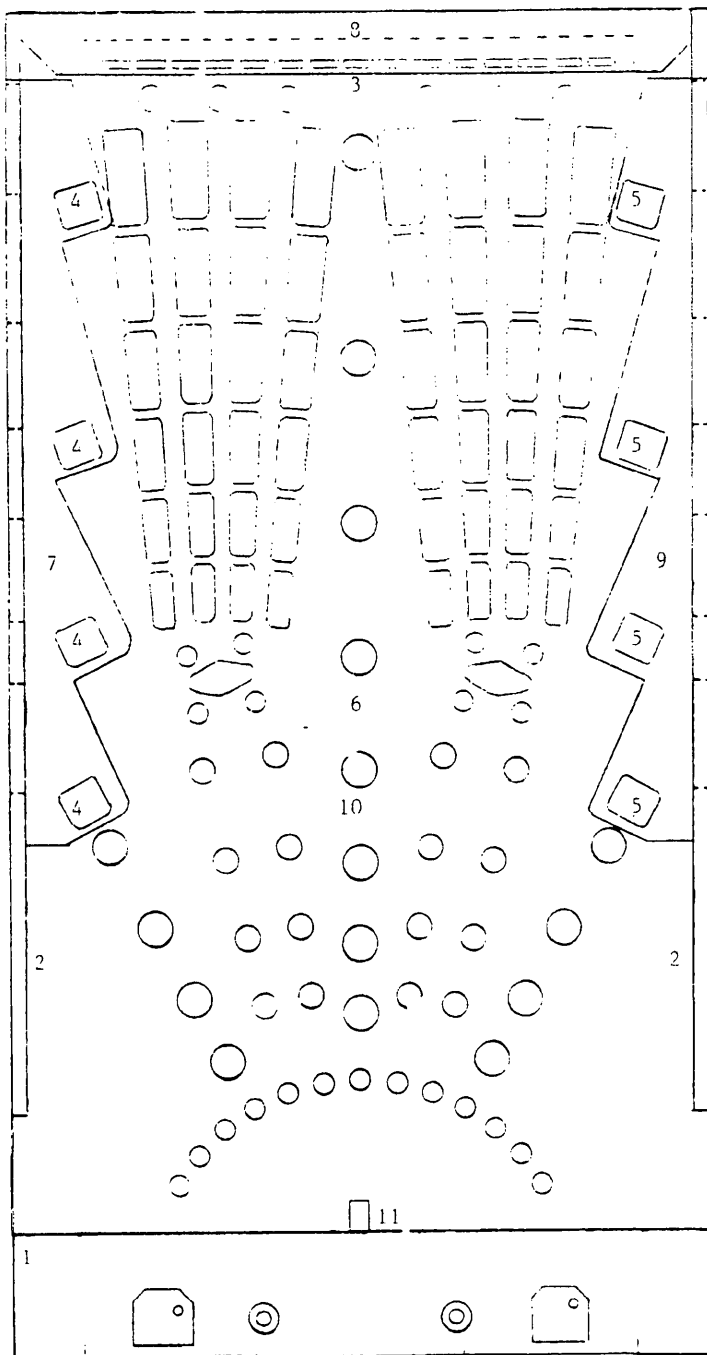
1. Push and release self test button (See Figure 111) at one second intervals approximately six times or until identification number 01 appears on the Base display.

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 50,000 points at a time. If the number "00" is left on the displays, the high score feature is eliminated.

Setting the first level automatically sets the second and third.

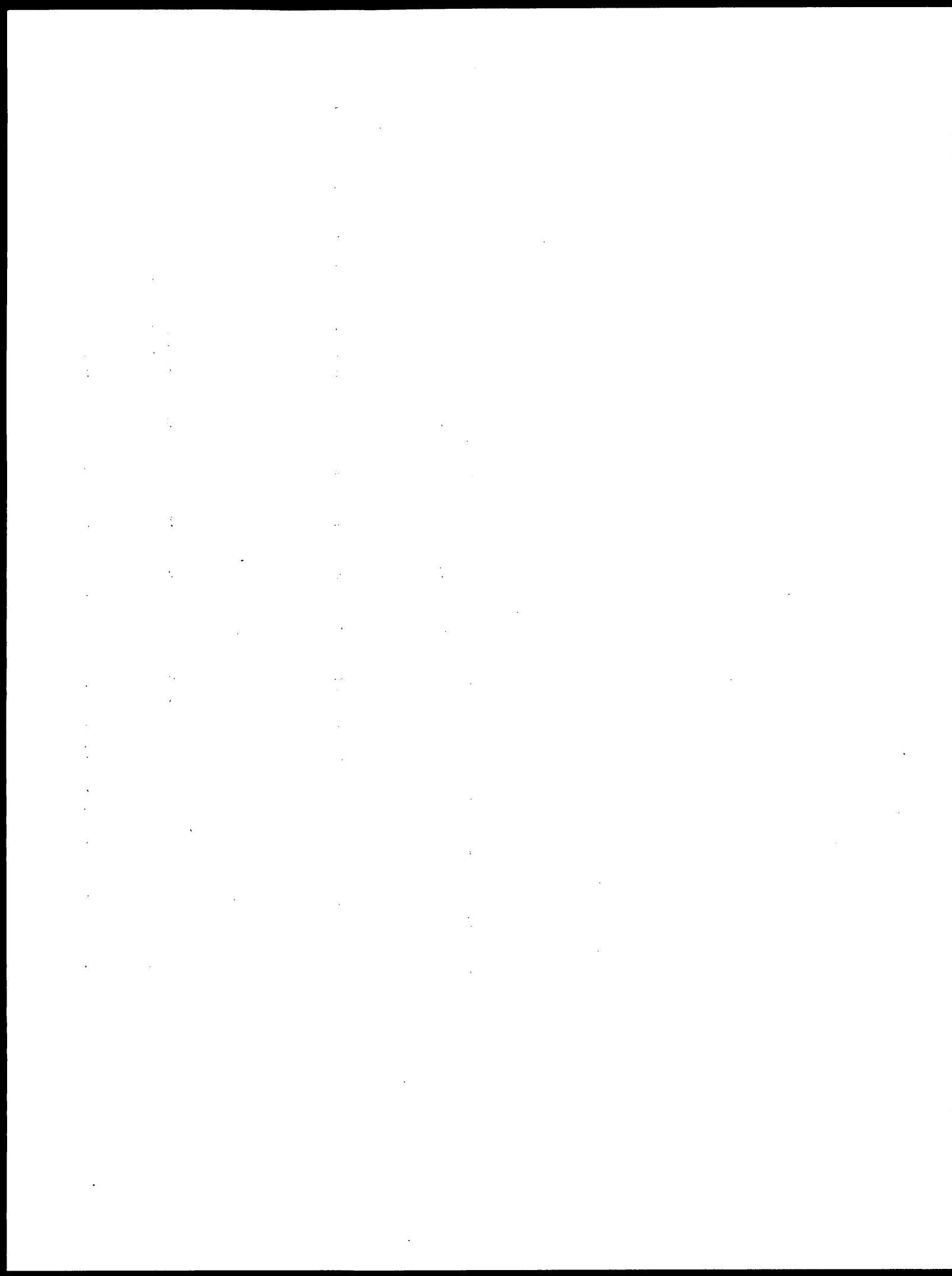
Sound:

The sound levels on this game are set thru the computer. Set the game to position #20 and set a number from 00 to 15 by use of the Credit Button. Position 00 is the lowest setting.



PANEL TOP PARTS

- | | |
|----------------------------|-------------|
| 1. Control Panel Assy. | ASE-3199 |
| 2. Rail (L & R) | CA-1208-146 |
| 3. Top Target Assy. | ASE-3188 |
| 4. Single Target Assy. (L) | ASE-3188-1 |
| 5. Single Target Assy. (R) | ASE-3188-2 |
| 6. Screened Panel Overlay | M-1787-52 |
| 7. Left Cannons | M-1629-3 |
| 8. Top Cover | M-1639-4 |
| 9. Right Cannons | M-1639-5 |
| 10. Playfield Plexiglass | M-1960-1 |
| 11. Gun Assembly | ASE-3190 |



RECOMMENDED

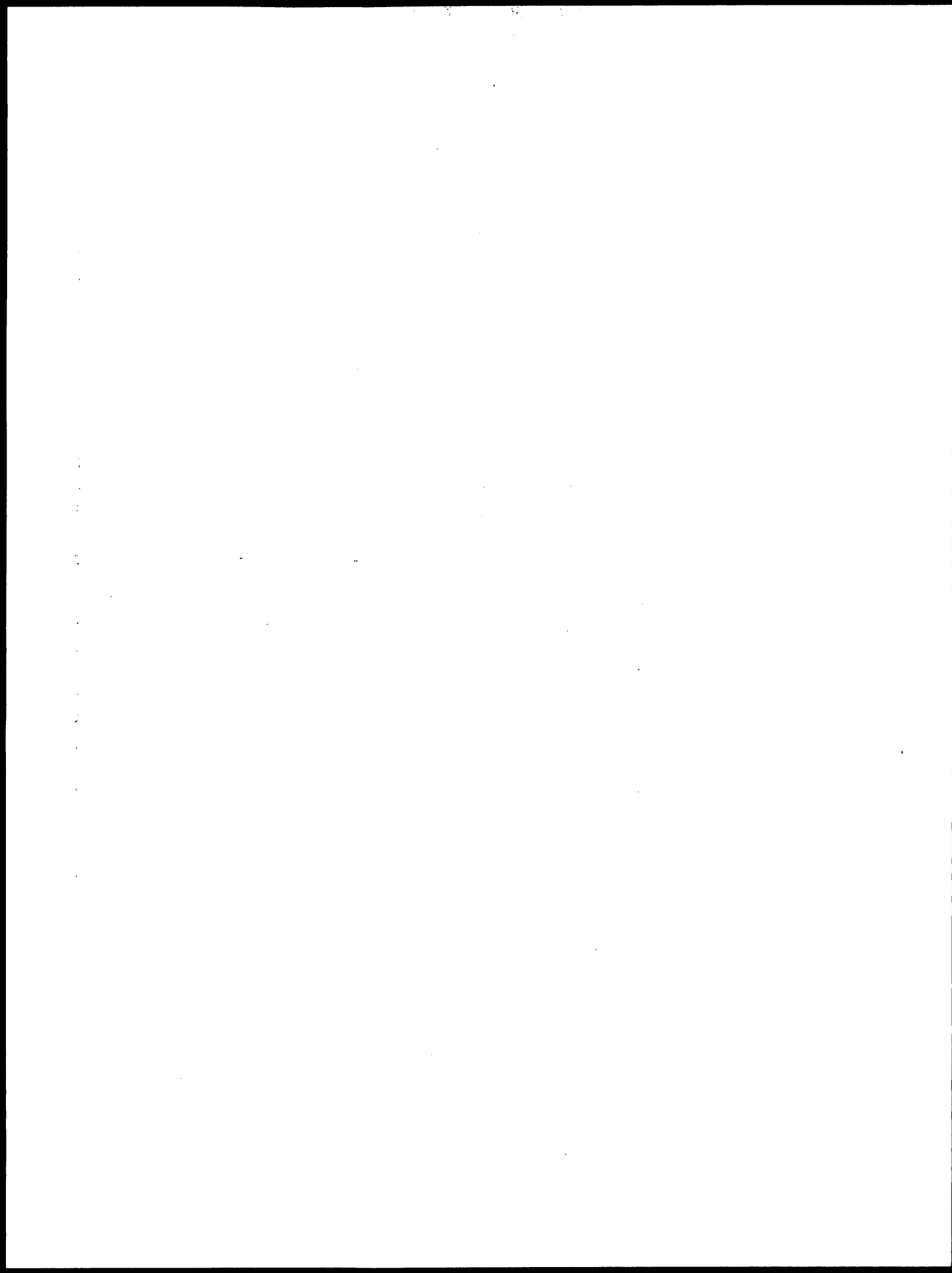
Instruction, Score Cards to be used on RAPID FIRE #1282

BASE STATIONS

Instruction Cards	M-1508-106-B
Score Card	M-1508-106-R
2 Laser Cannons every	350,000
1 Panic button every	700,000
1 Base station every	1,050,000

ADDITIONAL CARDS

	1 LASER CANNON	1 PANIC BUTTON	BASE STATION		3 LASER	1 PANIC	1 BASE
M-1508-106-E	200,000	400,000	600,000	M-1508-106-1	200,000	400,000	600,000
M-1508-106-F	250,000	500,000	750,000	M-1508-106-2	250,000	500,000	750,000
M-1508-106-G	300,000	600,000	900,000	M-1508-106-3	300,000	600,000	900,000
M-1508-106-H	350,000	700,000	1,050,000	M-1508-106-4	350,000	700,000	1,050,000
M-1508-106-I	400,000	800,000	1,200,000	M-1508-106-5	400,000	800,000	1,200,000
M-1508-106-J	450,000	900,000	1,350,000	M-1508-106-6	450,000	900,000	1,350,000
M-1508-106-K	500,000	1,000,000	1,500,000	M-1508-106-7	500,000	1,000,000	1,500,000
M-1508-106-L	550,000	1,100,000	1,650,000	M-1508-106-8	550,000	1,100,000	1,650,000
M-1508-106-M							



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 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. 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 Self-Test button again causes the sound module to play the "Game Over" tune repeatedly.
4. 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'.
5. Pressing the Self-Test button 22 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.

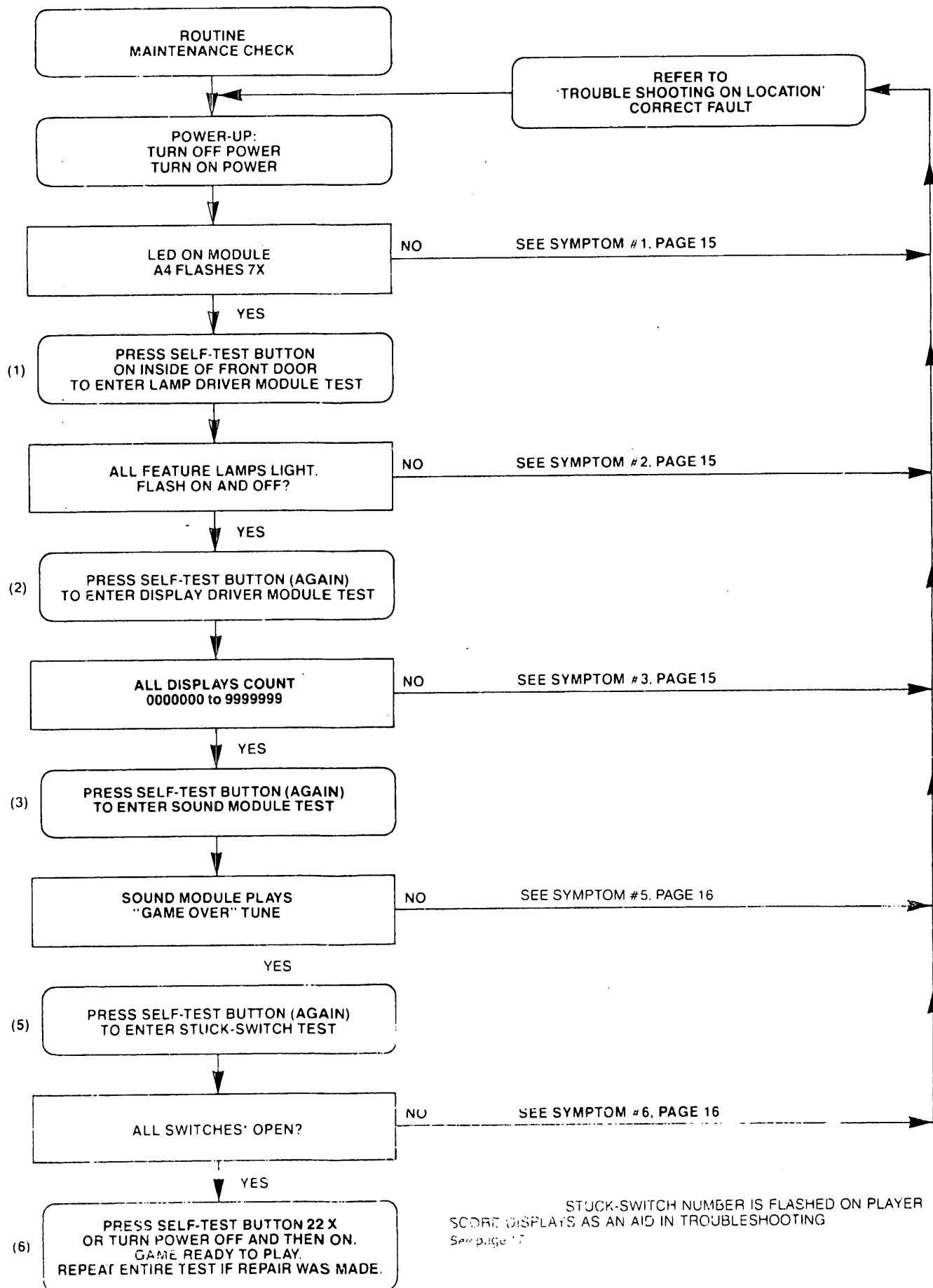
After successful completion of the Self Diagnostic Test procedure, set the game up for play. If actuating a switch assembly results in intermittent or no response, clean contacts by gently closing them on a clean business card or piece of paper and wiping until they wipe clean. Regap, if necessary, to 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) **SYMPTOM:** 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) Carefully lift the playfield (or open the back box) to gain access to the solenoid. Turn power OFF. Inspect the solenoid.
 B) 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.
 C) Replace Solenoid Driver/Voltage Regulator module A3. See CAUTION NOTE 3AB.
 D) Replace Sound Module A8.
 E) Replace MPU module A4. See CAUTION NOTE, 1C.
- 4B) **SYMPTOM:** Solenoid(s) always energized—Note: if impulse solenoids (gun strobe lights, 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, A1 and AJ.
- 5) **SYMPTOM:** No Sound.
ACTION: A) With Power ON, open front door, press Self-Test switch four times.
 B) If correct, sound will be heard. If incorrect, try seating speaker lead connector (J2) and input connector (J1).
 C) If correct, sound will be heard. If incorrect, refer to Module Replacement procedure.
- 6) **SYMPTOM:** Feature (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, Base in Play 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. 560-3.

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

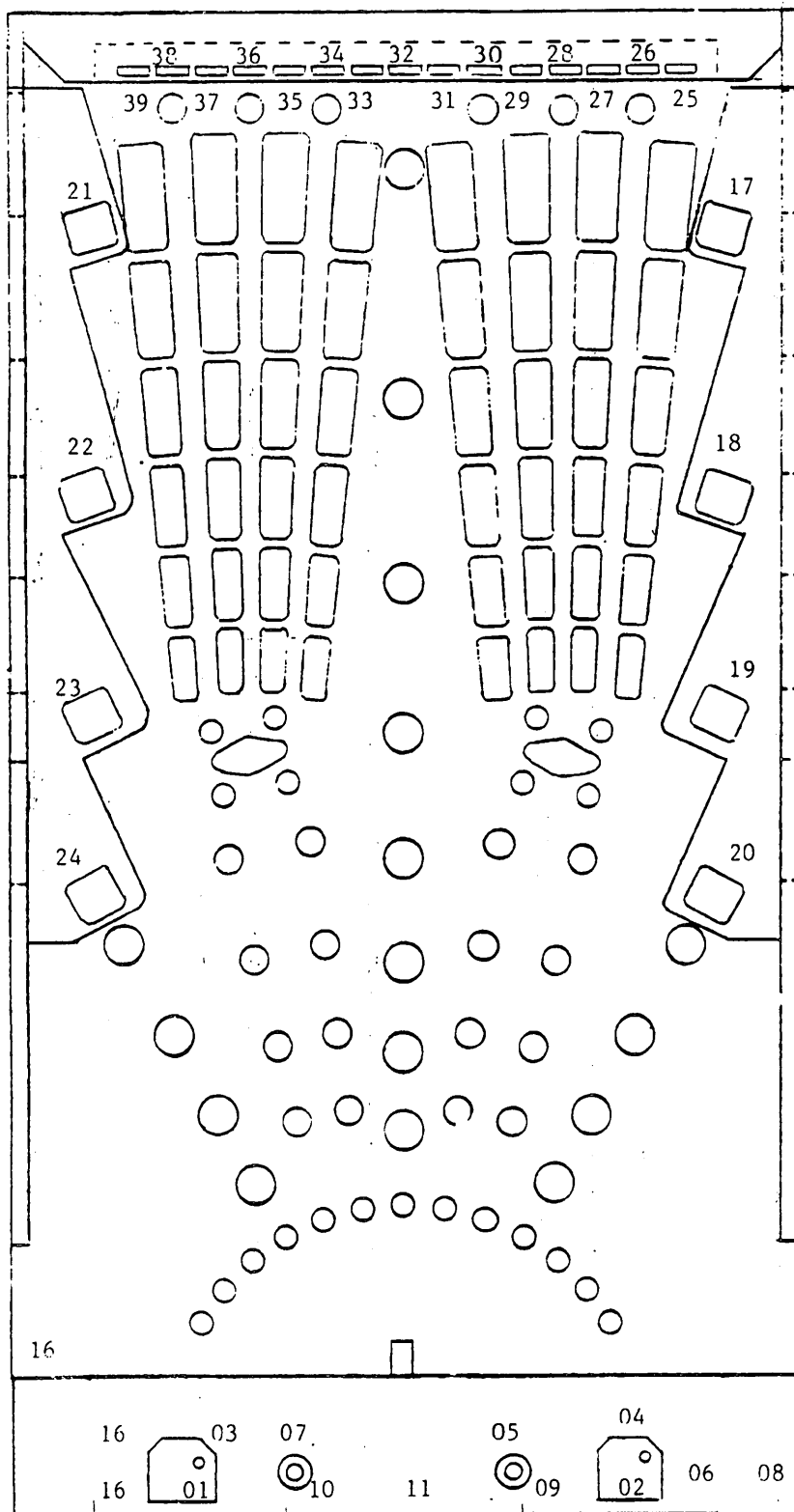
**GAME #1282 RAPID
SWITCH IDENTIFICATION TABLE**

**Self
Test # DESCRIPTION**

01 FIRE LEFT GUN
02 FIRE RIGHT GUN
03 GUN LEFT MOVE BUTTON
04 GUN RIGHT MOVE BUTTON
05 LASER BUTTON (RIGHT)
06 CREDIT BUTTON (ON DOOR)
07 PANIC BUTTON (LEFT)
08 SPECIAL CREDIT BUTTON
(ON CABINET)
09 COIN III (RIGHT)
10 COIN I (LEFT)
11 COIN II (MIDDLE)
12
13
14
15
16 SLAM (3)
17 RIGHT #1 TANK (TOP)
18 RIGHT #2 TANK
19 RIGHT #3 TANK
20 RIGHT #4 TANK (BOTTOM)

**Self
Test # DESCRIPTION**

21 LEFT #1 TANK (TOP)
22 LEFT #2 TANK
23 LEFT #3 TANK
24 LEFT #4 TANK (BOTTOM)
25 TOP #1 FLAP (RIGHT SIDE)
26 TOP #2 FLAP
27 TOP #3 FLAP
28 TOP #4 FLAP
29 TOP #5 FLAP
30 TOP #6 FLAP
31 TOP #7 FLAP
32 TOP #8 FLAP
33 TOP #9 FLAP
34 TOP #10 FLAP
35 TOP #11 FLAP
36 TOP #12 FLAP
37 TOP #13 FLAP
38 TOP #14 FLAP
39 TOP #15 FLAP (LEFT SIDE)
40



#1282 RAPID FIRE

SWITCH ASSEMBLY IDENTIFICATION NUMBERS

NOTE: CABINET: 08, 16

DOOR: 06, 09, 10, 11, 16

CONTROL PANEL: 01, 02, 03, 04, 05, 07

FIGURE V

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 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.

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

XI. PARTS LIST

#1282 RAPID FIRE

MISCELLANEOUS	PART NUMBER
Transformer (Domestic or Export)	E-122-142
Bulbs, #555	E-125-73

ASSEMBLY COILS

Goin Lockout	FO-36-7000
Gun	N-23-1110

MOTORS

Agitator	E-119-506
Ball Filler	E-119-505
Fan Motor	E-119-508

PLAYFIELD PARTS	See Figure II
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MODULES

Lamp Driver A5 (2 used)	AS-2518-23
Display Driver A1 (1 used)	AS-2518-21
Display Driver A1 (2 used)	AS-2518-58
Solenoid Drive/Voltage Regulator A3	AS-2518-22
MPU A4	AS-2962-34
Transformer & Rectifier A2	AS-2877-6
Rectifier Board (Part of A2)	AS-2518-54
Squawk & Talk	AS-3107-11
Optical Switch	AS-2518-95
Single Target Optical Switch	AS-2518-100
Single Target Optical Switch	AS-2518-101
Ball Delivery Sensor & Motor Control	AS-2518-102
Ball Delivery (LED) Control	AS-2518-103

REPAIRS PROCEDURES/AIDS

Module & Component Replacement	F.O. 560-3
AID (Assistance in Diagnostics)	
Kit, used with F.O. 560-3	Kit #485-1

MODULE COMPONENTS

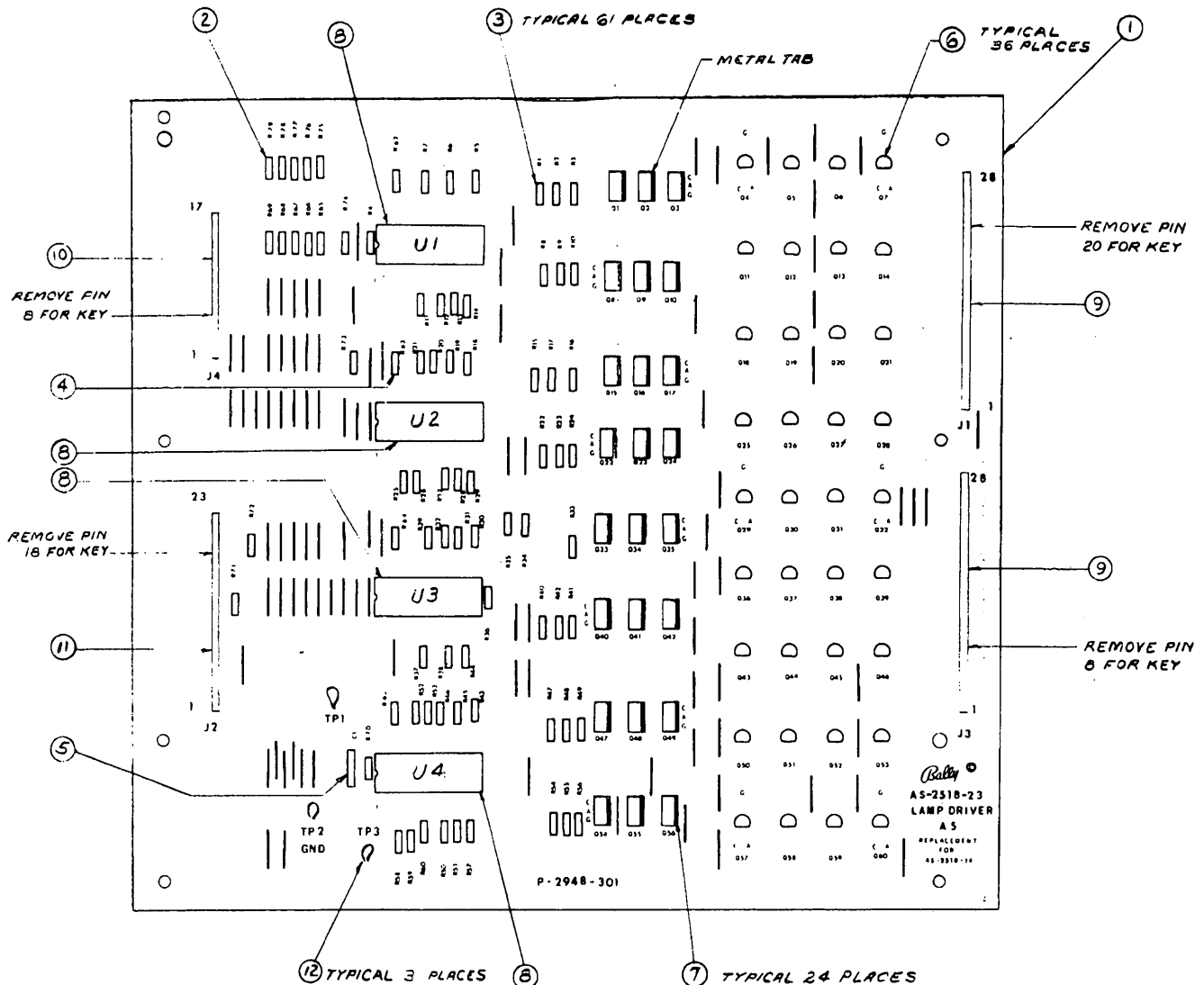
SEE MODULE PARTS LIST

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 #49

AS-2518-23 LAMP DRIVER MODULE



A5: LAMP DRIVER MODULE COMPONENT PARTS LIST

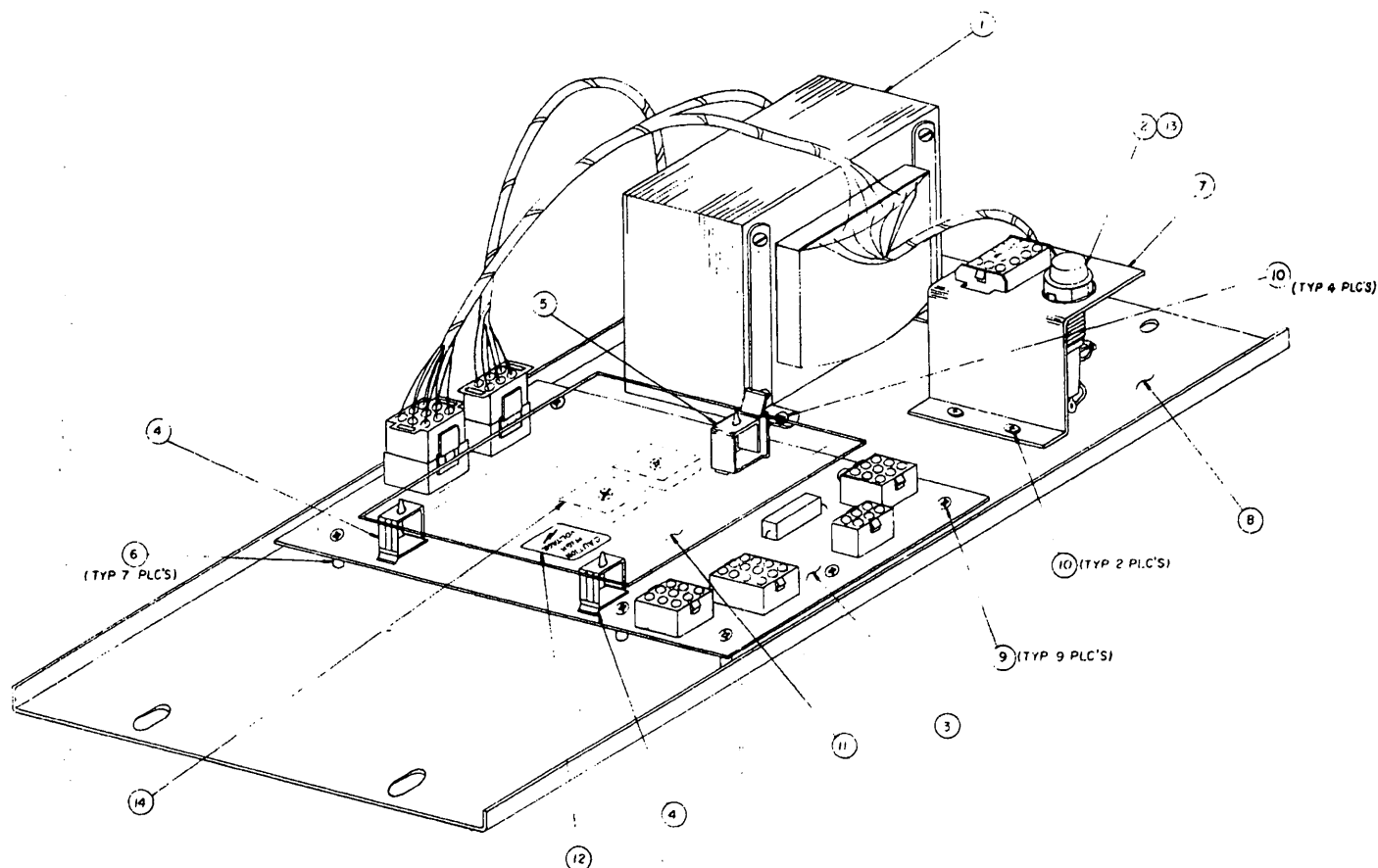
ITEM	REFERENCE DESIGNATION	BALLY PART #	DESCRIPTION
1	A5	AS-2518-23	Lamp Driver Module, Complete
2	R71-R79	E-00105-242	Resistor, 20k Ω , 5%, 1/4 W
3	R1-R60, R70	E-00105-0237	Resistor, 2k Ω , 5%, 1/4 W
4	R61-R69	E-00105-0256	Resistor, 2.2M Ω , 1/4 W
5	C1	E-00586-0065	Capacitor, .01 MFD, 500V
6	Q4-Q7, Q11-Q14, Q18-Q21, Q25-Q32, Q36-Q39, Q43-Q46, Q50-Q53, Q57-Q60	E-00585-0014	SCR, 2N5060
7	Q1-Q3, Q8-Q10, Q15-Q17, Q22-Q24, Q33-Q35, Q40-Q42, Q47-Q49, Q54-Q56	E-00585-0029	SCR, MCR106-1
8	U1-U4	E-00620-0037	I.C., Decoder, 14514B
9	J1, J3	E-00715-0004	28 Pin Wafer Connector
10	J4	E-00715-0024	17 Pin Wafer Connector
11	J2	E-00715-0014	2

A3: SOLENOID DRIVER/VOLTAGE REGULATOR MODULE

COMPONENT PARTS LIST

ITEM	REFERENCE DESIGNATION	BALLY PART #	DESCRIPTION
1	A3	AS-2518-22	Solenoid Driver/Voltage Regulator Module, Complete
3-14	Resistors		Resistor, See Schematic for value.
15	RT1	E-00599-0014	Pot. (Linear) 25K
17	C25, 29	E-00586-0014	Capacitor, .1 MFD, 20V
18	C26	E-00586-0059	Capacitor, 160 MFD, 350V
19	C24	E-00586-0063	Capacitor, 2 MFD @ 25V
20	C23	E-00586-0062	Capacitor, 11700 MFD, 20V
21	C1-C8, C11-C21	E-00586-0064	Capacitor, .002 MFD, 1kv
22	C27, C28	E-00586-0065	Capacitor, .01 MFD, 500V
24	K1	E-00146-0795	Relay, Printed Circuit
25	Q1-Q19	E-00585-0034	Transistor, SE9302
26	Q22, Q23	E-00585-0041	Transistor, 2N3440
27	Q21	E-00585-0042	Transistor, 2N3584
28	Q20	E-00710	+5V Regulator, LAS1405 or 78H05KC or LM323K
30	CR1-CR21	E-00587-0015	Diode (IN4004)
31	VR1	E-00598-0010	Diode, Zener 140V, IN5275A
33	U1, U3, U4	E-00681	I.C. Transistor Array, CA3081
34	U2	E-00620-0039	I.C. Binary to 1/16 Decoder, 74L154
36		E-00592-0002*	Relay Socket
37		M-1839*	Relay Holder
39		E-00682	Heat Sink, TO5
40		E-00682-0001	Heat Sink, TO66
41		E-00682-0002	Heat Sink, TO3 Case
42		E-00715-0039	15 Pin Wafer Connector
43		E-00715-0016	12 Pin Wafer Connector
44		E-00715-0020	25 Pin Wafer Connector
45		E-00715-0033	9 Pin Wafer Connector
55		M-1838	

A2: POWER TRANSFORMER MODULE

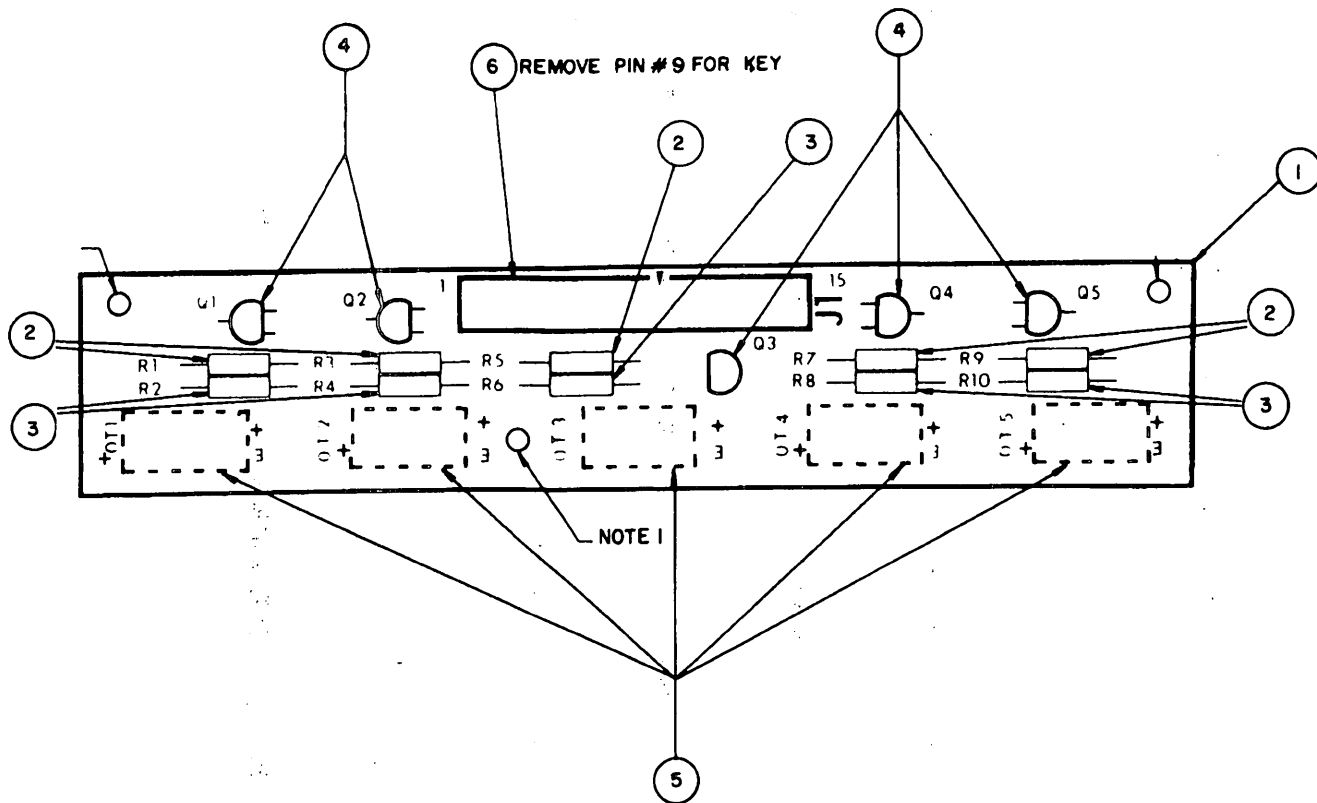


COMPONENT PARTS LIST

ITEM	REFERENCE DESIGNATION	BALLY PART #	DESCRIPTION
0	A2	AS-2877-6	Power Transformer Module, Complete
1		AS-3071-2	Transformer
2		E-148-25	Fuse Holder
3	A2	AS-2518-54	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-832-1812	Screw
10		RLPP-1032-1806	Screw
11		P-2692-2	Shield
12		M-469-936a	High Voltage Sticker
13		E-133-24	3A S.B. Fuse
14		M-1834	H. S. Compound

OPTICAL SWITCH (ASSEMBLY)

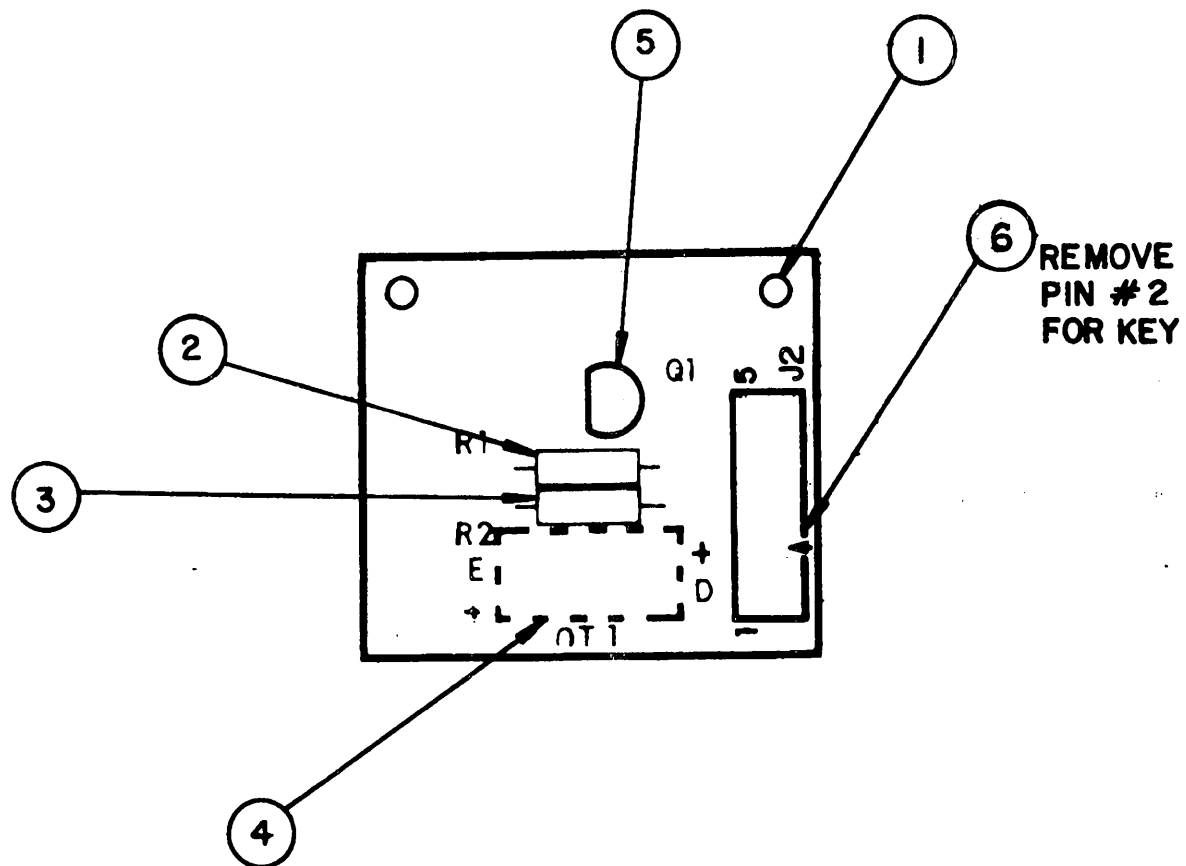
AS-2518-95



ITEM	REFERENCE DESIGNATION	BALLY PART #	DESCRIPTION
1	M-645-658	P-2948-507	P. C. B. Board
2	R1, R3, R5, R7, R9	E-105-227	300K Ω , 1/4 W, 5% Resistor
3	R2, R4, R6, R8, R10	E-105-234	160 Ω , 1/4 W, 5% Resistor
4	Q1, Q2, Q3, Q4, Q5	E-585-31	Transistor 2N3904
5	OT 1, 2, 3, 4, 5	E-585-79	Opt. Inter. H22A1
6	J1	E-766-15	15 Pin KK100 Connector
7	Used With 4 G.I. CNY 36 Only	C-1037	Spacer

SINGLE TARGET OPTICAL SWITCH

AS-2518-100



ITEM	REFERENCE DESIGNATION	BALLY PART #	DESCRIPTION
1	M-645-659	P-2948-508	P. C. B.
2	R1	E-105-227	Resistor, 300K Ω , 1/4 W, 5%
3	R2	E-105-234	Resistor, 160 Ω , 1/4 W, 5%
4	OT1	E-585-79	Opt. Inter. H22A1
5	Q1	E-585-31	Transistor, 2N3904
6	J2	E-766-5	5 Pin KK100, Connector
7	Used With 4 G.I. CNY 36 Only	C-1037	Spacer

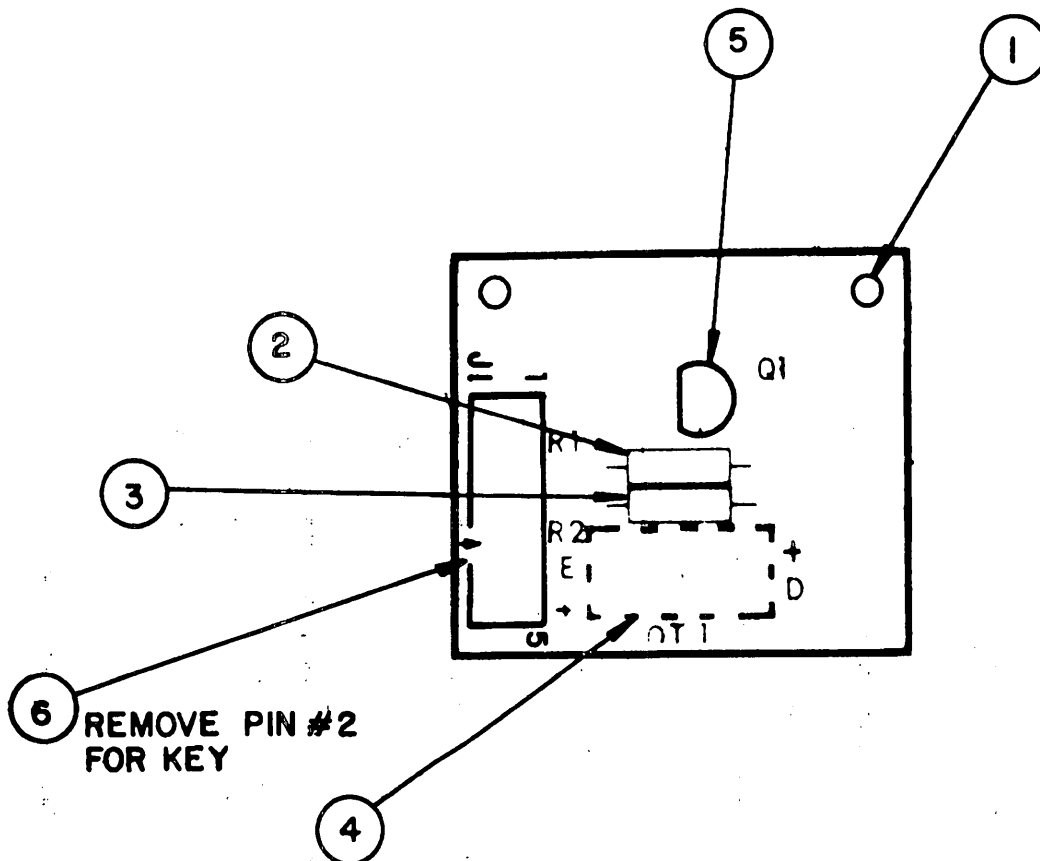
A1: 7 DIGIT DISPLAY DRIVER MODULE

COMPONENTS PARTS LIST

ITEM	QTY.	REFERENCE DESIGNATION	BALLY PART #	DESCRIPTION
1	1	A1	AS-2518-58	7 Digit Display Driver, Complete
3	3	R1, R3, R5, R7, R9, R11, R34, R56	E-105-331	Resistor, 100K Ω
4	15	R14, R16, R18, R20, R22, R24, R26, R35, R36, R37, R38, R39, R40, R58, R62	E-105-227	Resistor, 300K Ω
5	7	R43, R44, R45, R46, R47, R48, R55	E-105-228	Resistor, 9.1K Ω
6	9	R13, R15, R17, R19, R21, R23, R25, R61, R60	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	1	R63	E-105-248	Resistor, 150K Ω
11	1	C2	E-586-65	Capacitor, .01 MFD, 500V
13	7	Q7, Q8, Q9, Q10, Q11, Q12, Q21	E-585-32	Transistor (2N5401)
14	15	Q1, Q2, Q3, Q4, Q5, Q6, Q13, Q14, Q15, Q16, Q17, Q18, Q19, Q20, Q22	E-585-33	Transistor (MPS-A42)
15	2	CR1-2	E-587-14	Diode (1N4148)
16	1	VR1	E-598-7	Zener Diode, 110V (1N3045A)
17	1	U1	E-620-38	I.C. Decoder (MC14543)
18				
19	2	J1	E-736-10	10 Pin Wafer Pin Connector (KK-156)
21	1	DS1	E-680-7	7 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)
25	3	TP1-		

SINGLE TARGET OPTICAL SWITCH

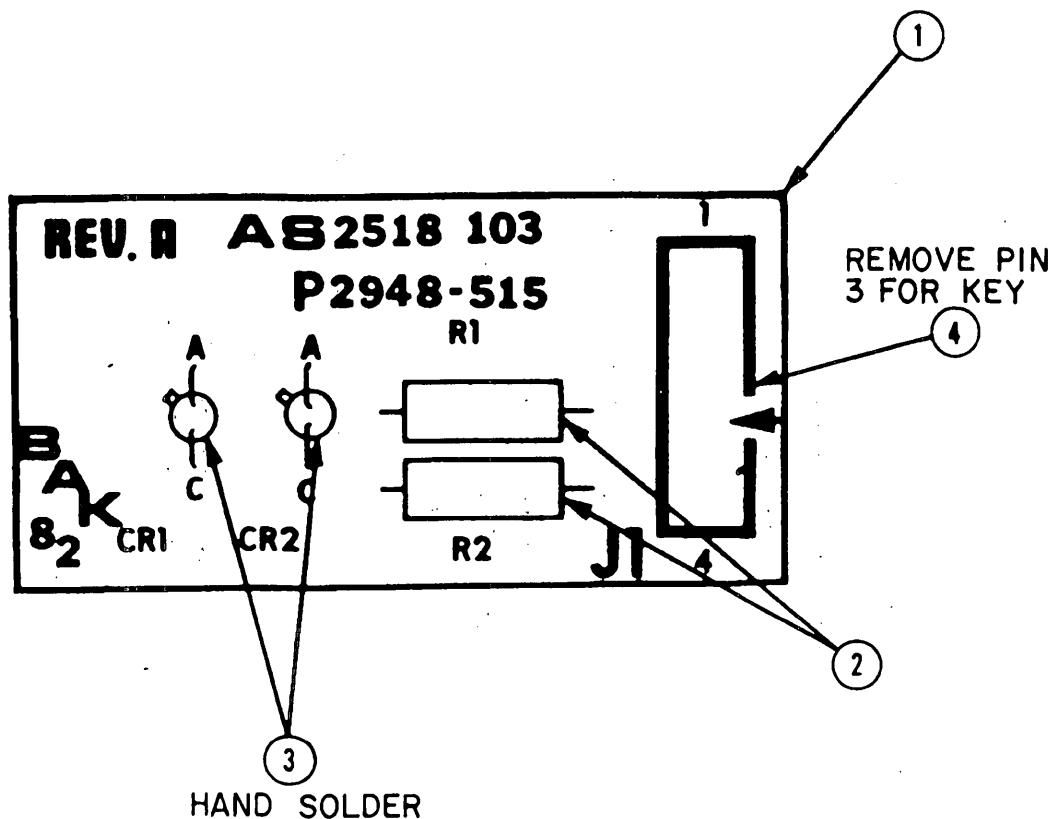
AS-2518-101



ITEM	REFERENCE DESIGNATION	BALLY PART #	DESCRIPTION
1	M-645-659	P-2948-508	P. C. B.
2	R1	E-105-227	Resistor, 300K Ω , 1/4 W, 5%
3	R2	E-105-234	Resistor, 160 Ω , 1/4 W, 5%
4	OT1	E-585-79	Opt. Inter. H22A1
5	Q1	E-585-31	Transistor, 2N3904
6	J1	E-766-5	5 Pin KK100, Connector
7	Used With 4 G.I. CNY 36 Only	C-1037	Spacer

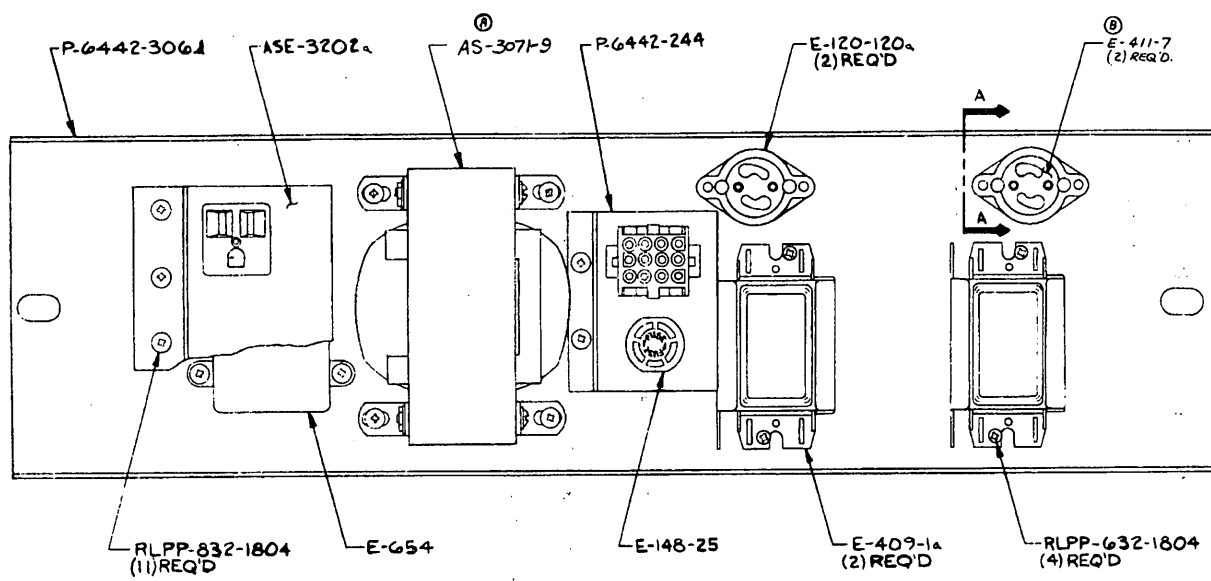
BALL DELIVERY (LED)
CONTROL BD. (ASSEMBLY)

AS - 2518 - 103



ITEM	REFERENCE DESIGNATION	BALLY PART #	DESCRIPTION
1	P.W.B.	P-2948-515	M-645-666
2	R1, R2	E-105-342	Res. 470 Ω , 1/2W, 5%
3	CR1, CR2	E-587-27	Diode, LED MLED 930
4	J1	E-737-4	Connector, KK 156

PART NO
ASE-3200 L

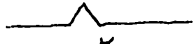


LSPR-632-1108
(4) REQ'D
SECTION A-A

OPER.	DEPT.	DESCRIPTION	TOOL NO.

NO.	REV.	DATE	BY
2	B	ADDED (2) E-411-7	AS-307H-9
1	A	REVISED, DIMS	E-120-120A

ALL DIMENSIONS UNLESS OTHERWISE SPECIFIED ARE TO THE CENTER UNLESS OTHERWISE SPECIFIED. CHANGES TO THIS DRAWING ARE TO BE MADE BY THE ISSUING OFFICE.	
DESIGNED BY: DRAWN BY: CHECKED BY: APPROVED BY: DATE: SCALE: MATERIAL: HARDENING: COOL:	MANUFACTURING CORP. 3640 BELMONT AVENUE CHICAGO, ILLINOIS 60632 12B2 DIE SIZE: C.C. FT. PER IN. LBS. PER IN. NAME: AUX. TRANSFORMER BASE ASSY PART NO: ASE-3200 L

<u>ITEM NUMBER</u>	<u>BALLY PART NUMBER</u>	<u>DESCRIPTION</u> *Indicates first time used
1.	A-4062-1	Core Plug Assy*
2.	A-4064	Coil Bracket and Stud Assy*
3.	A-4065	Position Arm & Bracket Assy*
4.	A-4066	Gun Base Plate & Stud Assy*
5.	A-4084	Coil Bracket & Plate Assy*
6.	ASE-3209	Plunger Assy*
7.	C-537-4	Nyliner Bushing
8.	M-1705-6	Lock Washer (2)
9.	M-1705-8	Lock Washer (8)
10.	M-1964	Spring Retainer* 
11.	N-23-1110	Coil* <i>22 Gauge wire</i>
12.	P-150-201	Fish Paper*
13.	P-1158-31	Spring Washer
14.	P-1973-526	Shimplate*
15.	P-2236-22	Coil Bracket*
16.	P-2236-23	Coil Bracket*
17.	P-6264-225	Plunger Stop Bracket*
18.	P-6442-299	Bracket*
19.	P-6629-203	Pivot Bracket*
20.	P-8251	Gun Shield (2)*
21.	S-2212	Gun Barrel*
22.	S-2215	Block*
23.	SP-100-381	Extension Spring*
24.	SP-200-231	Compression Spring (3)*
25.	CSAE-632-1806	Screw (2)
26.	CSAE-632-1816	Cap Screw
27.	CSAE-632-1804	Screw (8)
28.	LSPR-632-1104	Screw (7)
29.	LSPR-832-1104	Screw (4)



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Lexington, SC 29073-9252
803-957-5500