

GAME 1245
FO 713



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Installation and General Game Operation Instructions

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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 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

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.

When the ball enters the outhole, the bonus score is added to the total score. The player-up and/or ball in play on the back box is advanced one position. The outhole kicker serves the ball to the shooter alley and play is resumed. 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.

Extra balls won during the course of the game are played immediately after the player's regular ball enters the outhole. The player-up and/or ball in play on the back box are not advanced for extra ball play. Bonus score is added to the player's score before the game serves the extra ball for play.

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 all 4 player scores. If the 'High Score to Date' is beat, this feature* awards free games.

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

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

*Some tunes and features can be disabled by operator if so desired. See Back Box Adjustments.

NOTE: Scoring and feature units will differ from game to game.

III. BOOKKEEPING FUNCTIONS

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

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

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

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

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

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

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

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

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

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

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

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

#1245 MEDUSA

FEATURE OPERATION & SCORING

A. COLOSSUS BONUS FEATURE

Completing the 1, 2, 3 target sequence or the four drop targets on the right side of the playfield, scores and advances the lit Colossus bonus value. The scores range from 30,000, to 150,000, and SPL.

Switch #7:
Memory of the Colossus Bonus.
ON: Liberal
OFF: Conservative

Switch: 15 Memory of 1, 2, 3 targets.
ON: Liberal
OFF: Conservative

B. MEDUSA BONUS FEATURE

When the ball goes in the outhole, the lit bonus score is added to the player's total score. If the 2X light is lit the bonus score is added to the player's total score twice. If the 3X light is lit, the bonus score is added to the player's total score three times. If the 5X light is lit the bonus score is added to the player's total score five times. A tilt nullifies the bonus score.

The bonus multipliers are lit as follows:

1st left lane shot lites 2X
2nd left lane shot lites 3X
3rd left lane shot lites 5X
4th left lane shot scores 50,000

The Medusa bonus is advanced by hitting any of the 1, 2, 3 targets or the four right side drop targets or return lane rollover stars or outlane rollovers or by making either the left lane or right lane shot. Three advances are awarded for each Gorgon star which is lit.

Switch #16: Award of Medusa Bonus special.
ON: Liberal
OFF: Conservative

Switch #24: Memory of 1-19 bonus.
ON: Liberal
OFF: Conservative

C. OLYMPUS BONUS FEATURE

When a top drop target sequence is completed, the player scores the lit advance value on the Olympus light feature. A-B targets double the lit advance value. Flashing light on the Olympus light feature represent the Olympus bonus values.

The Olympus bonus values are:

1st flashing light 50,000.
2nd flashing light 100,000.
3rd flashing light 150,000 and extended play.
4th flashing light 200,000 and special.
All Olympus bonus values are collected in the saucer when lit.

Switch #30: Memory of saucer collect bonus light.
ON: Liberal
OFF: Conservative

Switch #21 & 22: Controls Olympus advance value.

	Thresholds			
	1st	2nd	3rd	4th
SW. 22, SW. 21: ON-ON	3	3	3	3
SW. 22, SW. 21: ON-OFF	3	3	2	2
SW. 22, SW. 21: OFF-ON	3	2	2	2
SW. 22, SW. 21: OFF-OFF	3	2	1	1

D. RIGHT LANE FEATURE

A right lane shot to the top of the playfield scores and advances the lit value. The values range from 10,000, to 50,000, and SPL.

E. SUBTRACT BONUS FEATURE

The top center red target (when lit) subtracts one light from the Olympus light feature. The center red target lights after the player has reached the first Olympus threshold.

SWITCH #6: Controls subtract bonus feature.

ON: Target does no subtract.

OFF: Target subtracts.

F. MOVEABLE POST FEATURE

At the start of each game the player is awarded 5 shots with the moveable post. The number of post shots each player has is shown on the playfield display as Shield of the Gods. A player adds post shots by making either the left lane or right lane shot. Each unused shot is worth 10,000 at end of game.

G. EXTRA BALL FEATURE

The center two numbers of the playfield display award an extra ball when a player has flashing identical numbers. The left number is stopped by completing the 1, 2, 3 target sequence. The right number is stopped by knocking down all four right drop targets. *Unlike* flashing numbers are restarted by making either the left lane or right lane shot.

Switch #23: Memory of extra ball numbers.

ON: Liberal

OFF: Conservative.

H. LAST BALL EXTENDED PLAY FEATURE

The player qualifies for the saucers last ball extended play by reaching the third threshold on the Olympus light feature. If collected, the player receives a guaranteed last ball for the amount of time units shown on the playfield display. During last ball extended play, no outhole bonuses are collected until all time units have run out. Time units are awarded as follows:

- Making 1-2-3 targets—10 time units.
- Knocking down all four right drop targets—5 time units.
- Saucer shot—1 time unit.
- A & B arrows when lit—1 time unit.

I. MOVEABLE FLIPPERS

When each top drop target is knocked down, the top flippers close and start a timer. The flippers open when the timer reaches zero or the ball leaves the top playfield area.

Switch #8: Moveable flipper timer.

ON: Liberal (accumulates time)

OFF: Conservative (Resets timer)

J. PLUNGER SHOT FEATURE

Each lit rollover star awards the following values.

- 3 Medusa bonus advances.
- 10,000 points.
- 500 points spinner values.

K. SPECIAL REPLAY/X-BALL/NOVELTY MODES

Self test positions 16 and 17 give the operator flexibility to award a replay ball 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
Saucer Special	Replay	X-Ball*	50,000
Right Gate Lane Special	Replay	X-Ball*	50,000
Medusa Bonus Special	Replay	X-Ball*	50,000
Colossus Bonus Special	Replay	X-Ball*	50,000
Like Feature X-Ball	X-Ball	X-Ball**	25,000
Self-Test Position 17	Set to "03"	Set to "02"	Set to "01"
Scoring Thresholds	Award Replay	Award X-Ball**	Award No Award

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

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

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

*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	
		32	31
	✓5	OFF	ON
	4	ON	OFF
	3	OFF	OFF
	2	ON	ON

MATCH FEATURE:

When the Match Feature is ON, a random number appears on the Match/Ball in Play 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
	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 winning score becomes the 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.

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/ball in play 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 all scoring will have a noise effect with background.

NOTE: To correct clarities of speech and sound, adjust controls as follows:

- Turn remote volume control on front door all the way up.
- Turn the speech volume control on the printed circuit board full clockwise, then counterclockwise until speech is clear and understandable.
- 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:

Top center back red target lite adjustment:

Liberal	SW. 6 ON	Top Olympus red lites do not step back 1 when target is hit.
Conservative	SW. 6 OFF	Top Olympus red lites step back 1 when target is hit.

Colossus bonus lite adjustment:

Liberal	SW. 7 ON	Any advanced bonus lite on will come on for next ball.
Conserative	SW. 7 OFF	Any advanced bonus lite on will not come on for next ball.

Opening of movable flipper 10 second timer adjustment:

Liberal	SW. 8 ON	Hitting top targets adds 10 seconds each to keep flippers closed.
Conservative	SW. 8 OFF	Closed flippers will open after 10 seconds until next target is hit.

Left side target 2, 3 arrow lite adjustment:

Liberal	SW. 15 ON	Any lit 2 or 3 arrow will come on for next ball.
Conservative	SW. 15 OFF	Any lit 2 or 3 arrow will not come on for next ball.

Medusa bonus special lite adjustment:

Liberal	SW. 16 ON	Medusa special lites with 40 and 80.
Conservative	SW. 16 OFF	Medusa special lites with 80.

Advance Olympus bonus 1, 2, 3 lite adjustment:

		OLYMPUS BONUS RED LITES			
		1st 5	2nd 5	3rd 5	4th 5
Liberal	SW. 22, 21 ON	3	3	3	3
Medium	SW. 22 ON, 21 OFF	3	3	2	2
Semi-Medium	SW. 22 OFF, 21 ON	3	2	2	2
Conservative	SW. 22, 21 OFF ✓	3	2	1	1

Extra ball match number display adjustment:

Liberal	SW. 23 ON	Any left or right number flashing will flash for next ball.
Conservative	SW. 23 OFF	Any left or right number flashing will not flash for next ball.

Medusa bonus from 1 to 19 lite adjustment:

Liberal	SW. 24 ON	Any bonus lite from 1-19 on will come on for next ball.
Conservative	SW. 24 OFF	Any bonus lite from 1-19 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.

Saucer collect Olympus bonus arrow lite adjustment:

Liberal	SW. 30 ON	Saucer arrow lite on will come on for next ball.
Conservative	SW. 30 OFF	Saucer arrow lite on will not come on for next ball.

C. FRONT DOOR GAME ADJUSTMENTS

High Score Feature Adjustments:

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

Any level from 10,000 to 9,990,000 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 9,990,000 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 Admustrments.'

SELF TEST SETUP FOR 16-22:

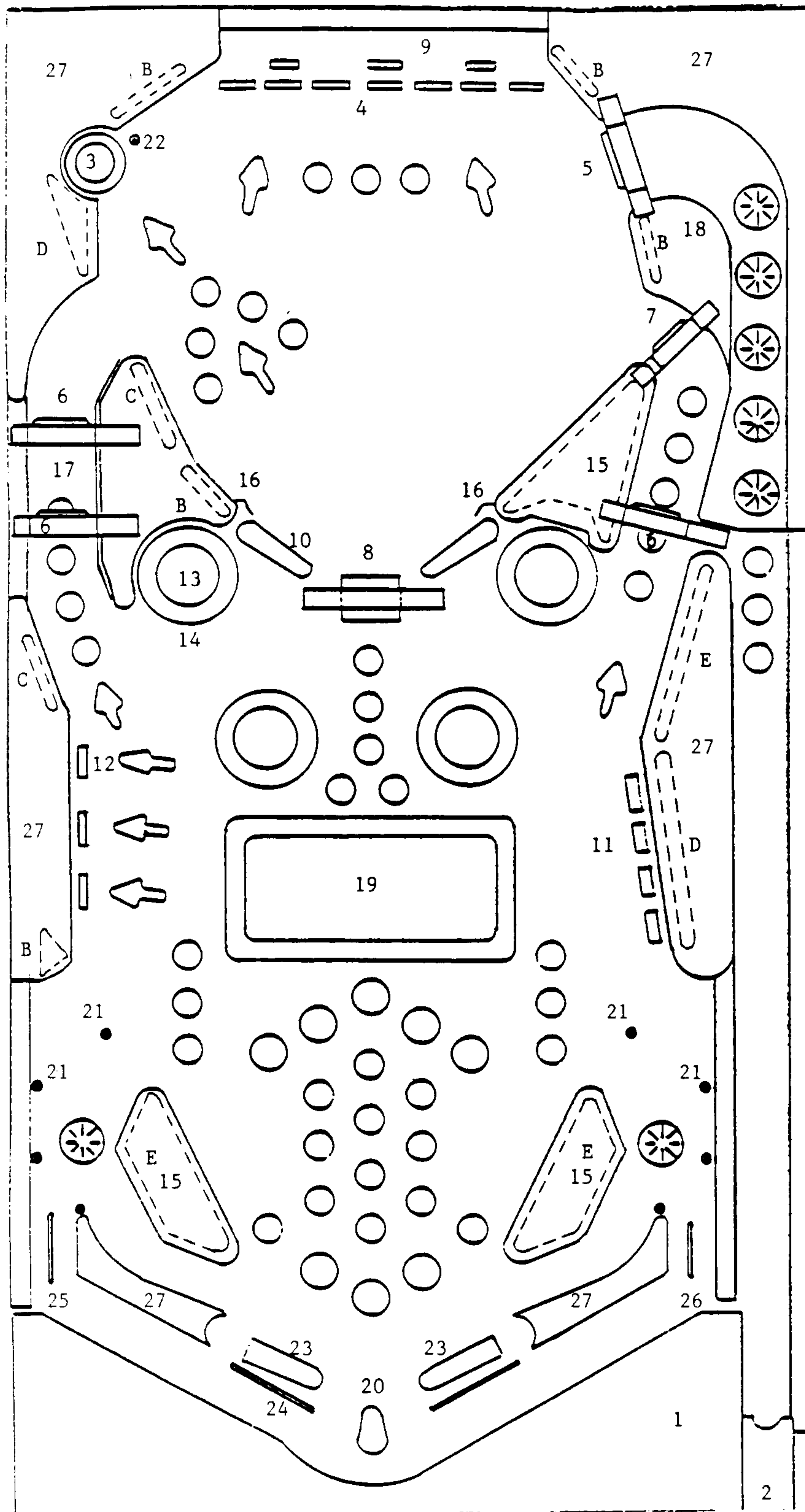
To set up positions 16-22 push and release self test button till 16 shows on match/ball in play. Now pulse replay button for recommended setup from "00" thru "03." Repeat for positions 17, 18, 19 or 22. Positions 20, 21 setups go from "00" thru "15."

SOUND

In addition to individual volume controls for speech and other game sounds on the Squawk and Talk Board. 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).



MEDUSA #1245

RUBBER PARTS

A.	R-521	3/4"	(2)
B.	R-521-1	1"	(6)
C.	R-521-2	1 1/2"	(2)
D.	R-521-3	2"	(2)
E.	R-521-4	2 1/2"	(3)
F.	R-521-5	3"	(1)
G.	R-243	5/16"	(8)
H.	R-533-3	FLIPPER	(2)

PANEL TOP PARTS

1.	Bottom Arch	P-5871-87	
2.	Shooter Gauge	P-6359-52	
3.	Eject Hole Assm.	ASE-428-53	
4.	Drop Target Assm.	ASE-3038-4	
5.	Gate & Wire Assm.	ASE-2250-24	
6.	Gate & Wire Assm.	ASE-2250-94	
7.	Gate & Wire Assm.	ASE-2250-95	
8.	Spinner Assm.	ASE-2250-96	
9.	Feature Display Assm.	ASE-3114	
10.	Zipper Flipper Assm.	ASE-2397-4	
11.	Drop Target Assm.	ASE-2795-73	
12.	Target Switch Assm.	A-3359-20	
13.	Bumper Cap	A-4009-6	(4)
14.	Bumper Collar	C-1018-1	(4)
15.	Slingshot Assm.	ASE-2593-6	(3)
16.	Guide Wire	M-121-118	(2)
17.	Guide Wire	M-121-117	
18.	Guide Wire	M-121-116	
19.	Playfield Readout Cover	M-1949-1	
20.	Kicker Post Assm.	ASE-2593-7	
21.	Mini-Post & Bumper Assembly	ASE-2836-2	(8)
22.	Mini-Post & Bumper Assembly	ASE-2836-3	(2)
23.	LG. Transparent Flipper	A-4017-1	(2)
24.	Buffer Wire	M-121-53	(2)
25.	Wire Actuator	ASE-2806	
26.	Wire Actuator	ASE-2806-1	
27.	Screened plastics Assm.	A-2890-159	

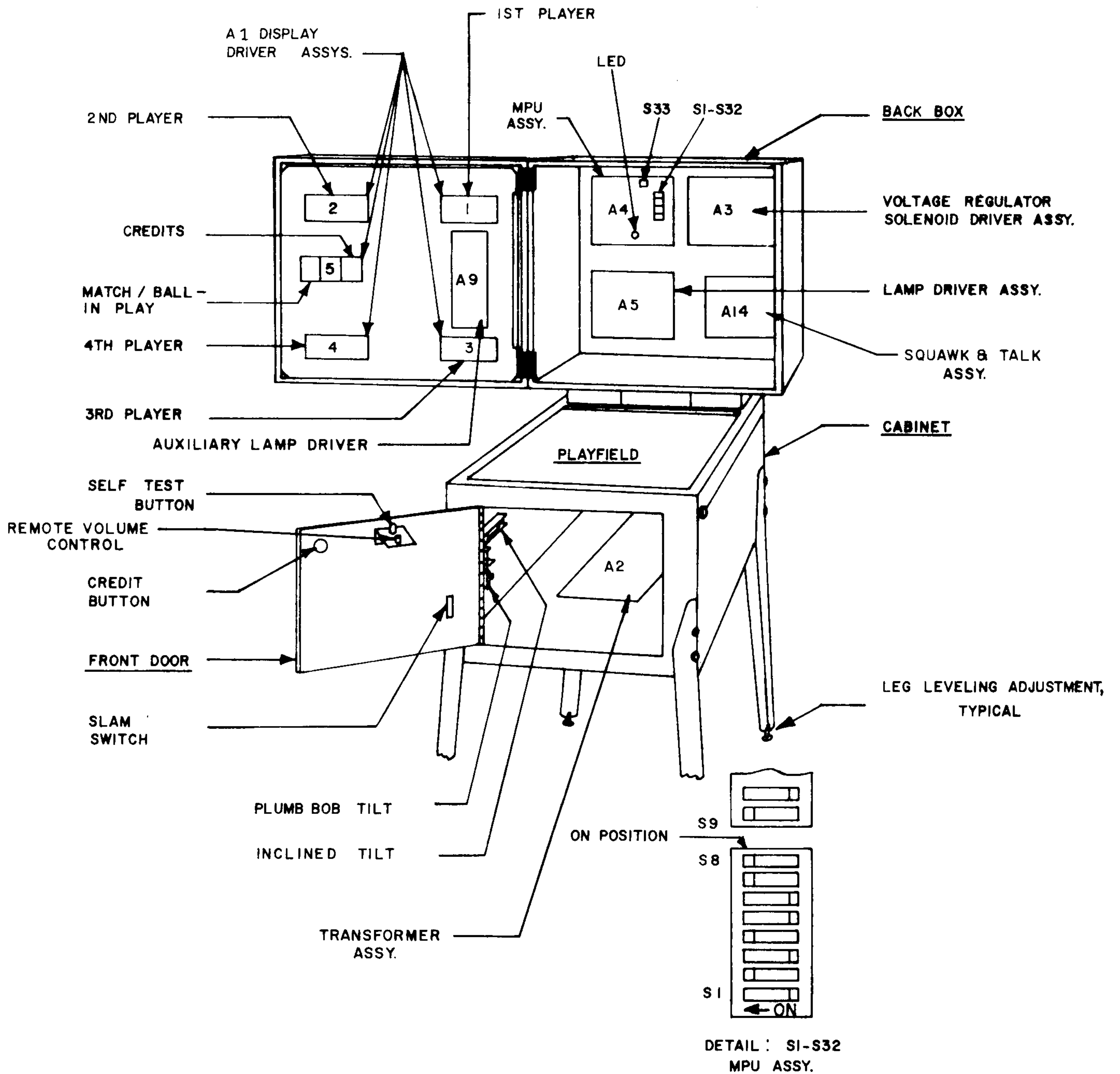


FIGURE III. ELECTRONIC PIN BALL MACHINE

RECOMMENDED

Instruction, Score Cards and High Score Feature Settings
to be used on MEDUSA #1245

3-BALL

REPLAYS

Instruction Card M-1508-101-E
Score Card M-1508-101-B
1 Replay at 500,000
1 Replay at 1,000,000

5-BALL

REPLAYS

Instruction Card M-1508-101-E
Score Card M-1508-101-A
1 Replay at 650,000
1 Replay at 1,200,000

EXTRA BALL

Instruction Card M-1508-101-F
Score Card M-1508-101-A W/NN-1
1 Extra Ball at 1,000,000
1 Extra Ball at 1,600,000

ADDITIONAL CARDS

REPLAYS

M-1508-H-1	400,000	950,000
M-1508-I-1	450,000	1,000,000
M-1508-J-1	500,000	1,000,000
M-1508-K-1	500,000	1,100,000
M-1508-L-1	550,000	1,100,000
M-1508-M-1	600,000	1,100,000
M-1508-N-1	650,000	1,200,000
M-1508-O-1	700,000	1,200,000
M-1508-P-1	700,000	1,400,000
M-1508-Q-1	800,000	1,400,000
M-1508-R-1	900,000	1,400,000
M-1508-S-1	900,000	1,500,000
M-1508-T-1	1,000,000	1,500,000
M-1508-U-1	1,000,000	1,600,000
M-1508-V-1	1,000,000	1,800,000
M-1508-W-1	1,000,000	2,000,000
M-1508-X-1	1,100,000	1,800,000
M-1508-Y-1	1,100,000	2,000,000
M-1508-FF-1	1,200,000	2,000,000
M-1508-GG-1	1,300,000	2,000,000
M-1508-HH-1	1,400,000	2,100,000
M-1508-II-1	1,400,000	2,200,000

EXTRA BALL

M-1508-NN-1	1,000,000	1,600,000
M-1508-OO-1	1,000,000	2,000,000
M-1508-PP-1	1,200,000	2,200,000
M-1508-QQ-1	1,400,000	2,400,000

Instruction Card, Novelty
M-1508-101-G

BLANKS (3)

High game to date recommended levels;
(reset periodically)
3 BALL 1,200,000
5 BALL 1,600,000

#1245 MEDUSA

RECOMMENDED SETTINGS

RECOMMENDED REPLAY GAME SETTING FOR:

		3-BALL	5-BALL
TOP CENTER BACK RED TARGET LITE	SW. 6	OFF	OFF
COLOSSUS BONUS LITE	SW. 7	ON	OFF
OPENING OF MOVABLE FLIPPER 10 SECOND TIMER	SW. 8	ON	OFF
LEFT SIDE TARGET 2, 3 ARROW LEFT	SW. 15	ON	ON
MEDUSA BONUS SPECIAL LITE	SW. 16	ON	OFF
ADVANCE OLYMPUS BONUS 1, 2, 3 LITE	SW. 21	ON	ON
ADVANCE OLYMPUS BONUS 1, 2, 3 LITE	SW. 22	ON	OFF
EXTRA BALL LIKE NUMBER DISPLAY	SW. 23	ON	ON
MEDUSA BONUS FROM 1-19 LITE	SW. 24	ON	ON
NUMBER OF REPLAYS PER GAME	SW. 29	ON	ON
SAUCER COLLECT OLYMPUS BONUS ARROW LITE	SW. 30	ON	OFF
BALLS PER GAME	SW. 31	OFF	ON
BALLS PER GAME	SW. 32	OFF	OFF

REPLAY

Instruction Card
Score Card
Major Mode

3-BALL

M-1508-101-E
M-1508-101-B
Self Test Position 16, 17
Set to "03"
SW. 28 ON
Self Test Position 19
Set to "03"

5-BALL

M-1508-101-E
M-1508-101-A
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-1508-101-E
M-1508-101-A W/NN-1
Self Test Position 16, 17
Set to "02"
SW. 28 OFF
Self Test Position 19
Set to "00"

NOVELTY

Instruction Card
Major Mode

Match
High Score to Date

M-1508-101-G
Self Test Position 16, 17
Set to "01"
SW. 28 OFF
Self Test Position 19
Set to "00"

M-1508-101-G
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 the "Game Over" 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 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. 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.

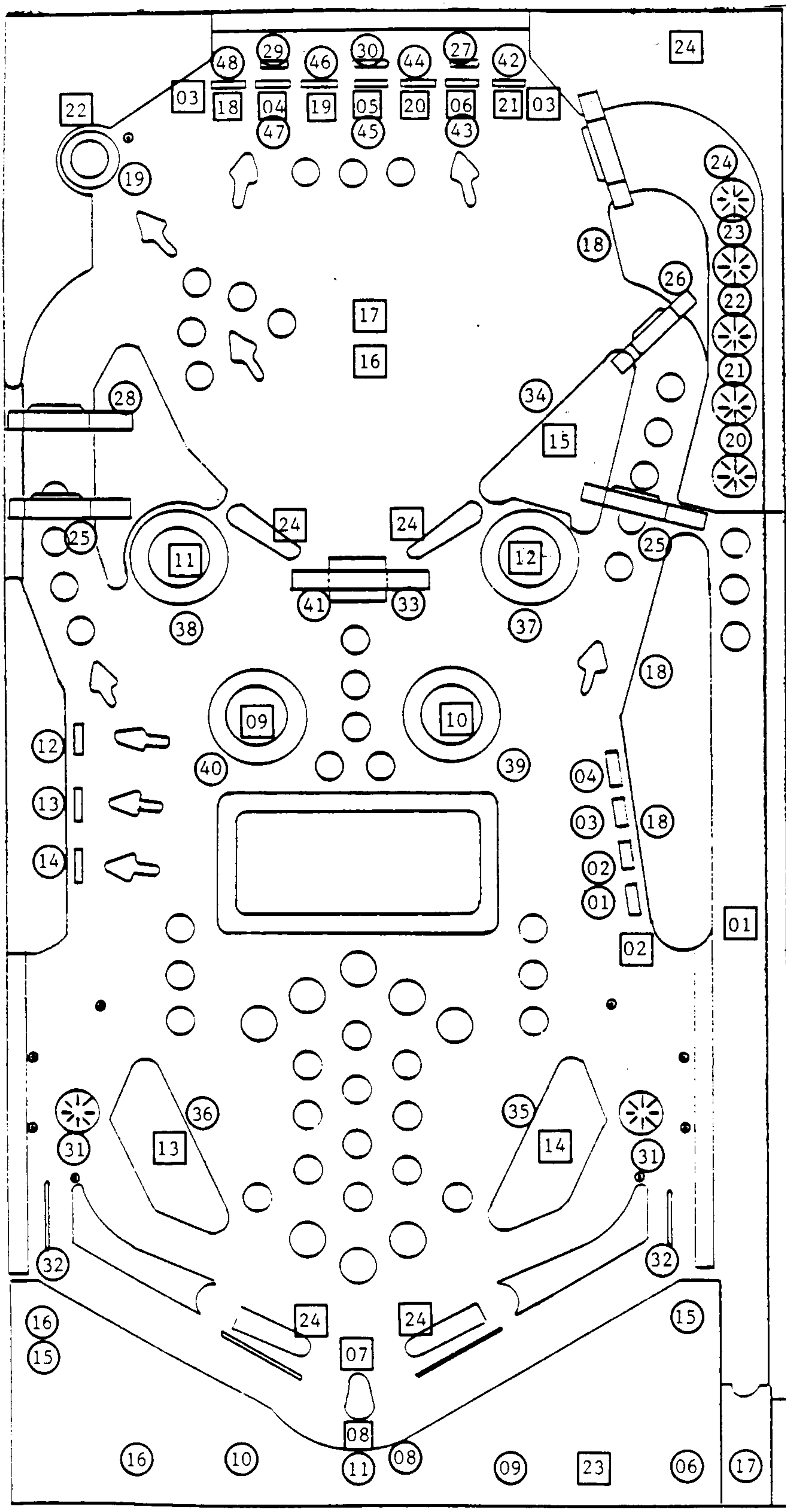
If the problem is more complicated and is not solved by following this procedure, more detailed procedures are available from Bally. See the Parts List for ordering information.

GAME #1245 MEDUSA

SOLENOID IDENTIFICATION TABLE

Self Test #	SOLENOID IDENTIFICATION	Self Test #	SOLENOID IDENTIFICATION
01	KNOCKER	13	LEFT SLINGSHOT
02	4 DROP TARGET RESET	14	BOTTOM RIGHT SLINGSHOT
03	7 DROP TARGET RESET	15	TOP RIGHT SLINGSHOT
04	#2 TOP DROP TARGET	16	OPEN MOVABLE FLIPPER
05	#4 TOP DROP TARGET	17	CLOSE MOVABLE FLIPPER
06	#6 TOP DROP TARGET	18	#1 TOP DROP TARGET FROM LEFT
07	SHEILD OF THE GODS POST	19	#3 TOP DROP TARGET
08	OUTHOLE KICKER	20	#5 TOP DROP TARGET
09	BOTTOM LEFT THUMPER BUMPER	21	#7 TOP DROP TARGET
10	BOTTOM RIGHT THUMPER BUMPER	22	SAUCER
11	TOP LEFT THUMPER BUMPER	23	COIN LOCKOUT DOOR
12	TOP RIGHT THUMPER BUMPER	24	K1 RELAY (FLIPPER ENABLE)

Switch Self Test #	DESCRIPTION	Switch Self Test #	DESCRIPTION
01	4 DROP TARGET D (BOTTOM)	25	RIGHT AND LEFT LOWER GATE
02	4 DROP TARGET C	26	RIGHT TOP GATE
03	4 DROP TARGET B	27	TOP RIGHT BACK TARGET
04	4 DROP TARGET A (TOP)	28	LEFT TOP GATE
05		29	TOP LEFT BACK TARGET
06	CREDIT BUTTON	30	TOP MIDDLE BACK TARGET
07		31	LEFT & RIGHT OUTLANE R.O. BUTTON
08	OUTHOLE	32	LEFT & RIGHT OUTLANE
09	COIN III (RIGHT)	33	SPINNER
10	COIN I (LEFT)	34	TOP RIGHT SLINGSHOT
11	COIN II (MIDDLE)	35	BOTTOM RIGHT SLINGSHOT
12	LEFT SIDE TOP KICKER	36	LEFT SLINGSHOT
13	LEFT SIDE MIDDLE TARGET	37	RIGHT TOP THUMPER BUMPER
14	LEFT SIDE BOTTOM TARGET	38	LEFT TOP THUMPER BUMPER
15	TILT (3)	39	RIGHT SIDE THUMPER BUMPER
16	SLAM (2)	40	LEFT BOTTOM THUMPER BUMPER
17	CABINET POST BUTTON	41	MOVABLE FLIPPER END OF STROKE
18	2, 10 POINT & 4 DROP TARGET REBOUND	42	#7 TOP DROP TARGET (RIGHT)
19	SAUCER	43	#6 TOP DROP TARGET
20	#1 SHOOTER LANE ROLLOVER BUTTON	44	#5 TOP DROP TARGET
21	#2 SHOOTER LANE ROLLOVER BUTTON	45	#4 TOP DROP TARGET
22	#3 SHOOTER LANE ROLLOVER BUTTON	46	#3 TOP DROP TARGET
23	#4 SHOOTER LANE ROLLOVER BUTTON	47	#2 TOP DROP TARGET
24	#5 SHOOTER LANE ROLLOVER BUTTON	48	#1 TOP DROP TARGET (LEFT)



#1245 MEDUSA



INDICATES SWITCH ASSEMBLY IDENTIFICATION NUMBERS
NOTE: CABINET: 15, 16, 17
DOOR: 06, 09, 10, 11, 16



INDICATES SOLENOID IDENTIFICATION NUMBERS.
NOTE: DOOR: 23
BACKBOX 24
CABINET: 01

FIGURE V

XI. PARTS LIST

#1245 MEDUSA

MISCELLANEOUS	PART NUMBER
Transformer (Domestic or Export)	E-122-142
Bulbs, #555	E-125-73
Fuse, 1 Amp. 3 AG Slow Blow (Playfield Solenoid Protection)	E-133-44

ASSEMBLY COILS

Coin Lockout	FO-36-7000
Flipper (4)	AQ-25-500/ 34-4500
Knocker	ATT-26-1200
Outhole Kicker	AT-26-1200
Thumper Bumper (4)	AN-26-1200
Sling-Shot (3)	AO-26-1200
Drop Target Reset (3)	NO-26-1900
Individual Drop Target (7)	CV-31-2000
Shield of God Post	AO-26-1200
Close Movable Flipper	NB-24-1500
Open Movable Flipper	GT-30-1300
Saucer	AT-27-1300

PLAYFIELD PARTS

See Figure II

MODULES

Lamp Driver A5	AS-2518-23
Display Driver A1 (2 used)	AS-2518-21
Display Driver A1 (4 used)	AS-2518-58
Solenoid Driver/Voltage Regulator A3	AS-2518-22
MPU A4	AS-2962-29
Transformer & Rectifier A2	AS-2877-6
Rectifier Board (Part of A2)	AS-2518-54
Squawk & Talk	AS-3107-6
Auxiliary Lamp Driver A9	AS-2518-52
Solenoid Expander	AS-2518-66

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 Driver/Voltage Regulator A3
- KIT #493—For Display Driver A1
- KIT #494—For Lamp Driver A5