GAME SERIAL NUMBER LOCATION

Your game's serial number is stamped on a label on the outside back of the game. The same number is also on the chassis of the video display, power supply, Regulator/Audio II PCB, and the Game PCB. Please mention this number when calling your distributor for service.
Operation, Maintenance and Service Manual

Complete with Illustrated Parts Lists

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to licensed communications services is not permitted by the
FCC (Federal Communications Commission).
If you suspect interference from an ATARI game at your location, check the
following:
● All grounds (green wires) in the game are properly connected as shown in
the game wiring diagram, and
● The game's power cord is properly plugged into a grounded 3-wire outlet.
If you are unable to solve the interference problem, please contact:

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⚠️ WARNING ⚠️
Use of non-ATARI parts or modifications of your ATARI game circuitry may ad-
versely affect the safety of your game, and may cause injury to you and your
players.

The warranty printed on the inside back cover of this manual may be voided,
if you do any of the following:

● you substitute non-ATARI parts in your coin-operated game, or

● you modify or alter any circuits in your ATARI game by using kits or parts
  not supplied by Atari.

Not only may the use of any non-ATARI parts void your warranty, but any
such alteration may also adversely affect the safety of your game and may
cause injury to you and your players.
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NOTE

If reading through this manual does not lead to solving a certain maintenance problem, call TELEHELP® at the Atari Customer Service office in your geographical area, as shown below.

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062-52155
Set-Up Procedures

How to Use This Manual

This manual, written for game operators and service technicians, describes the Dig Dug™ game.

The manual contains information about all Dig Dug cabinets. Whenever information is unique to the Upright cabinet, this symbol appears: 

Whenever information is unique to the Cabaret™ cabinet, this symbol appears: 

Whenever information is unique to the Cocktail cabinet, this symbol appears: 

Chapter One includes new features, game set-up, option switch settings, self-test procedures and game play.

Chapter Two details troubleshooting procedures.

Chapter Three contains maintenance, repair and parts information.

In addition, schematic diagrams of the game circuitry are included with this manual.

Figures 1-1 and 3-1 illustrate the game cabinet. Italicized lettering on these figures refers you to other places in the manual for information about specific cabinet parts.
WARNING

SHOCK HAZARD

Connect this game only to a grounded 3-wire outlet. If you have only a 2-wire outlet, we recommend you hire a licensed electrician to install a grounded outlet. Players may receive an electric shock if this game is not properly grounded!

Figure 1-1 Game Overview
Upright Cabinet
A. New Features

The Dig Dug™ game has two new features. Even if you're familiar with ATARI® games, you should note these important differences:

- **Joystick Control.** This new four-position control is made of steel and molded plastic. It has few parts, which makes servicing easier. The leaf switches snap in and out for easy replacement. The rubber bellows is designed for a quick return to center.

- **Game Sounds.** There are 21 different game sounds. In addition, a special option switch setting lets you hear sounds used during game play, but turns off attraction-mode sounds.

New features, as well as all other major parts in the game, are illustrated in Figure 1-1. Throughout this manual, wherever one of these new features is mentioned, you will see this symbol:

---

**Figure 1-1** Game Overview, continued

Cabaret™ Cabinet
B. Opening the Cocktail Cabinet

1. Opening the Table Top
   - To open the game cabinet, unlock and open the two key locks at one end of the game cabinet, located immediately below the table top (see Figure 1-1).
   - Carefully lift the table top until the support arm locks into place. Do not jam the table top at the end of its upward swing.

2. Access Panel
   - To open the access panel, lift out the steel security bar that secures the panel to the cabinet wall.
   - The access panel near the bottom of the cabinet will then come out (See Figure 3-1).

3. Closing the Table Top
   - To close the cabinet, stand opposite the hinged end of the cabinet and grasp the table top with your right hand.
   - With your left hand, press the button at the middle of the support arm and push the button out toward the left.
   - Gently lower the table top to the closed position.
   - Lock both key locks.

---

Figure 1-1  Game Overview, continued
Cocktail Cabinet
C. Game Inspection

Please inspect your game carefully to insure that it was delivered to you in good condition.

**NOTE**

Do not plug the game in yet!

1. Examine the exterior of the game cabinet for dents, chips, or broken parts.
2. Remove the screws that were used as extra security to seal the rear access panel (Upright and Cabaret cabinets). Unlock and open this panel or the Cocktail table top, and the coin door; inspect the interior of the game as follows:
   - Check that all plug-in connectors (on the game harness) are firmly seated. Replug any connectors found unplugged. **Don't force connectors together.** The connectors are keyed so they only go on in the proper orientation. A reversed edge connector will damage a PCB and will void your warranty.
   - Check that all plug-in integrated circuits on the PCBs are firmly seated in their sockets.
   - Remove the tie-wrap that holds the coiled power cord on the inside cabinet wall (Upright and Cabaret cabinets). Check the power cord for any cuts or dents in the insulation. Place the square black plastic strain-relief plate in the wood slot at the bottom of the rear panel opening.

**WARNING**

To avoid electrical shock, do not touch internal parts of the display with your hands or with metal objects held in your hands!

- Note the game's serial number. On Upright and Cabaret cabinets, it is printed on a label on the back of the cabinet. On the Cocktail cabinet, the label is located on the start switch side of the cabinet. Verify that the same serial number is also on the Dig Dug game PCB, Regulator/Audio II PCB, power supply and video display. A drawing of the serial-numbered components is on the inside front cover of this manual. Please mention this number whenever you call your distributor for service.
- Check major subassemblies, such as the power supply, control panel and video display, for secure mounting.

D. Game Installation

1. **Installation Requirements**

<table>
<thead>
<tr>
<th>Requirement</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power</td>
<td>175 watts</td>
</tr>
<tr>
<td>Temperature</td>
<td>0 to 38°C (32 to 100°F)</td>
</tr>
<tr>
<td>Humidity</td>
<td>Not over 95% relative</td>
</tr>
<tr>
<td><strong>Upright Cabinet</strong></td>
<td></td>
</tr>
<tr>
<td>Space Required</td>
<td>64 x 79 cm (25 3/4 x 31 in.)</td>
</tr>
<tr>
<td>Game Height</td>
<td>174 cm (68 3/4 in.)</td>
</tr>
<tr>
<td><strong>Cabaret Cabinet</strong></td>
<td></td>
</tr>
<tr>
<td>Space Required</td>
<td>52 x 78 3/4 cm (20 1/2 x 31 in.)</td>
</tr>
<tr>
<td>Game Height</td>
<td>153 3/4 cm (60 1/2 in.)</td>
</tr>
<tr>
<td><strong>Cocktail Cabinet</strong></td>
<td></td>
</tr>
<tr>
<td>Space Required</td>
<td>62 1/4 x 62 1/2 cm (24 1/2 x 32 1/2 in.)</td>
</tr>
<tr>
<td>Game Height</td>
<td>65 x 101 cm (25 3/4 x 39 3/4 in.)</td>
</tr>
</tbody>
</table>

2. **Voltage Selection**

   The power supply used in this game operates on the line voltage of almost any country in the world. The power supply may have three different voltage selection plugs: 100 VAC (violet wire color), 220 VAC (blue wire color), and 240 VAC (brown wire color).

   Before plugging in your game, check your line voltage. Then check the wire color on the voltage selection plug that is plugged into your power supply. Make sure the voltage selection plug is correct for your location's line voltage (see Figure 3-12).
E. Cocktail Table Legs

This cocktail-table cabinet may be adjusted to four heights—65, 70, 76 or 101 cm (25 3/4, 27 3/8, 30 or 39 1/4 inches). To adjust the table height, refer to Figure 1-2.

- Remove or empty the coin box to prevent loose coins from sliding out of the box and into the game cabinet.
- Lay the table on end as shown. Place a support (the coin box, books or tool box) under the recessed side of the cabinet.
- Remove the two Allen-head screws on each leg. Grasp the legs and slide them into the desired position. Then replace the screws.

**Figure 1-2 Adjusting the Table Legs**
F. Switch Locations

1. On/Off Switch

The *Upright* and *Cabaret* cabinet on/off switch is located on the back of the cabinet, lower left side. The *Cocktail* cabinet on/off switch is located on the bottom of the cabinet (see *Figure 1-3*).

2. Utility Panel Switches

For *Upright* and *Cabaret* cabinets, the utility panel includes the volume control, self-test and coin switches, and coin counter. The coin switch is used to credit the game without tripping the coin counter. These switches are located inside the upper coin door (see *Figure 1-3*).

---

**Figure 1-3** Game Switch Locations

*Upright and Cabaret Cabinets*
Option Switches:

Switch at 2CD
(Game price and bonus options)

Switch at 2C
(Game difficulty, price and special options)

Volume Control
(To increase, turn clockwise)

Self-Test

Utility Panel:

Power ON/OFF Switch
(Reach under game to activate switch)

Figure 1-3  Game Switch Locations, continued
Cocktail Cabinet

3. Option Switches

Option switches, for all game cabinets, are located on the game PCB as follows:

- Game price and bonus options are at PCB location 2C/D.
- Game difficulty, price and special options are at PCB location 2C.
## G. Option Switch Settings

Tables 1-1 and 1-2 detail game options and their settings. Options are preset at the factory and shown by the $ symbols. However, you may change the settings to suit your individual needs.

### Table 1-1 Game Price and Bonus Option Settings

The 8-toggle switch at location 2C/D is accessible when the Dig Dug™ game PCB is mounted in place. To change switch settings, set the self-test switch to on. Verify the changes on the self-test screen. Then turn the self-test switch to off.

A “coin” is defined as 25¢, 1DM or 1Fr. If you have a 2DM/1DM or 2Fr/1Fr coin door with two coin counters, set switch 8 at PCB location 2C to off. Then different denominations are counted on the two coin counters.

<table>
<thead>
<tr>
<th>Settings of 8-Toggle Switch on Dig Dug PCB (at 2C/D)</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>On</td>
<td>On</td>
</tr>
<tr>
<td>On</td>
<td>Off</td>
</tr>
<tr>
<td>Off</td>
<td>On</td>
</tr>
<tr>
<td>Off</td>
<td>Off</td>
</tr>
</tbody>
</table>

**Bonus lives awarded at the following point values:**

<table>
<thead>
<tr>
<th>With 1, 2 or 3 Dig Dug lives</th>
<th>With 5 Dig Dug lives</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Bonus</td>
<td>No Bonus</td>
</tr>
<tr>
<td>First at 10,000, second at 40,000, and every 40,000 $</td>
<td>First at 20,000, second at 60,000, and every 60,000</td>
</tr>
<tr>
<td>First at 10,000, second at 50,000, and every 50,000</td>
<td>First at 30,000, second at 80,000, and every 80,000</td>
</tr>
<tr>
<td>First at 20,000, second at 60,000, and every 60,000</td>
<td>First at 20,000, second at 50,000</td>
</tr>
<tr>
<td>First at 20,000, second at 70,000, and every 70,000</td>
<td>First at 20,000, second at 60,000</td>
</tr>
<tr>
<td>First at 10,000, second at 40,000</td>
<td>First at 30,000, second at 70,000</td>
</tr>
<tr>
<td>First at 20,000, second at 60,000</td>
<td>First at 20,000</td>
</tr>
<tr>
<td>First at 10,000</td>
<td>First at 30,000</td>
</tr>
</tbody>
</table>

**Right coin mech—coin doors with 1 or 2 coin counters**

<table>
<thead>
<tr>
<th>On</th>
<th>On</th>
<th>On</th>
<th>1 coin for 7 credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Off</td>
<td>On</td>
<td>On</td>
<td>1 coin for 6 credits</td>
</tr>
<tr>
<td>On</td>
<td>Off</td>
<td>On</td>
<td>1 coin for 3 credits</td>
</tr>
<tr>
<td>Off</td>
<td>Off</td>
<td>On</td>
<td>1 coin for 2 credits</td>
</tr>
<tr>
<td>On</td>
<td>On</td>
<td>Off</td>
<td>1 coin for 1 credit $</td>
</tr>
<tr>
<td>Off</td>
<td>On</td>
<td>Off</td>
<td>2 coins for 3 credits</td>
</tr>
<tr>
<td>On</td>
<td>Off</td>
<td>Off</td>
<td>2 coins for 1 credit</td>
</tr>
<tr>
<td>Off</td>
<td>Off</td>
<td>Off</td>
<td>3 coins for 1 credit</td>
</tr>
</tbody>
</table>

$Manufacturer's suggested settings
*See Table 1-2 for left coin mechanism.*
Table 1-2  Game Difficulty, Price and Special Options

The table below contains the switch settings for options relating to game difficulty, price and special options. The switches, on the game PCB at location 2C, are accessible when the PCB is mounted in place.

<table>
<thead>
<tr>
<th>Settings of 8-Toggle Switch on Dig Dug PCB (at 2C)</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>8       7       6       5       4       3       2</td>
<td>1</td>
</tr>
<tr>
<td>On      Off     On      On      Off     Off     Off     On</td>
<td>One coin counter</td>
</tr>
<tr>
<td>Off     On      Off     On      Off     Off     Off     On</td>
<td>Two coin counters*</td>
</tr>
<tr>
<td>On      Off     On      Off     On      Off     Off     On</td>
<td>A—Easy game difficulty</td>
</tr>
<tr>
<td>On      Off     Off     Off     On      Off     Off     On</td>
<td>B—Medium game difficulty</td>
</tr>
<tr>
<td>Off     On      Off     Off     On      Off     Off     On</td>
<td>C—Hard game difficulty</td>
</tr>
<tr>
<td>Off     Off     Off     Off     On      Off     Off     On</td>
<td>D—Expert game difficulty</td>
</tr>
<tr>
<td>On      Off     Off     Off     On      Off     Off     On</td>
<td>Continuation of game play</td>
</tr>
<tr>
<td>On      Off     Off     Off     On      Off     Off     On</td>
<td>No continuation of game play</td>
</tr>
<tr>
<td>On      Off     Off     Off     On      Off     Off     On</td>
<td>Attract Mode sound</td>
</tr>
<tr>
<td>On      Off     Off     Off     On      Off     Off     On</td>
<td>No Attract Mode sound</td>
</tr>
<tr>
<td>On      Off     Off     Off     On      Off     Off     On</td>
<td>Normal game action</td>
</tr>
<tr>
<td>On      Off     Off     Off     On      Off     Off     On</td>
<td>Freeze game action</td>
</tr>
<tr>
<td>Off     On      Off     Off     On      Off     Off     On</td>
<td>Left coin mech—coin doors with 2 coin counters</td>
</tr>
</tbody>
</table>

$Manufacturer's recommended settings

*Coin doors with different denominations and two coin counters.

H. Self-Test Procedure

This game will test itself and provide data to show that the game's circuitry and controls are operating properly. The data is provided on the video display and speaker. No additional equipment is necessary.

We suggest you perform the self-test procedure when you first set up the game, any time you collect money from the game, when you change game options, or when you suspect game failure.

Refer to Figure 1-3 for the location of the self-test switch and option switches. To perform the self-test, set the self-test switch to on. After about eight seconds the self-test screen will be displayed.

To see game statistics, press the utility coin switch. To reset the high score table, simultaneously push and hold the pump and utility coin switches for 10 seconds. To end the self-test, set the self-test switch to off.

The complete self-test procedure is explained in Chapter 2, Self-Test Procedure. If any part of the test described in Figure 1-4 fails, refer to Chapter 2.
Figure 1-4  Self-Test Procedure

Instruction

1. Set the self-test switch to on (see Figure 1-3).

2. Activate any control panel switch.

Test Passes

Patterns appear on the screen. After about 8 seconds, the screen displays the picture below. The RAMs, ROMs and other chips are tested. If the picture is different from the picture below, refer to Chapter 2, Self-Test Procedure.

Game sounds are produced, from SOUND 00 through SOUND 20. Activating any control panel switch produces a new sound. Test all switches this way. If test fails, refer to Chapter 2, Self-Test Procedure.

Game sounds:

- SOUND 00 Credit issued
- SOUND 01 Start of game
- SOUND 02 Indication of highest score
- SOUND 03 Game over
- SOUND 04 Monster attacking Dig Dug
- SOUND 05 Dig Dug dies
- SOUND 06 Monster escaping
- SOUND 07 Bonus Dig Dug awarded
- SOUND 08 End of wave
- SOUND 09 Monster speeding up
- SOUND 10 Monster crushed by rock
- SOUND 11 Monster bursting
- SOUND 12 Rock hitting ground
- SOUND 13 Rock falling
- SOUND 14 Dragon spitting fire
- SOUND 15 Dig Dug throwing harpoon
- SOUND 16 Dig Dug pumping up monster
- SOUND 17 Dig Dug walking
- SOUND 18 Monster moving
- SOUND 19 Dig Dug capturing vegetable
- SOUND 20 Enter initials into high score table

GAME STATISTICS: THE COUNT STARTS AT 9999999 AND DECREASES. For example, if you play 10 games, the game subtracts 10 from 9999 and the display shows 9899 for the number of games played. (Disregard decimal points.)
I. Game Play

The Dig Dug™ game is a one- or two-player game with a color raster-scan video display. The screen shows a cutaway raster view of the land, most of which is below ground. The player controls the Dig Dug character who travels through and digs tunnels in the dirt. The object is for Dig Dug to destroy monsters by pumping them up or dropping rocks on them and to capture vegetables.

The third picture simulates game play. Dig Dug walks through underground tunnels. Monsters chase him and he periodically pumps them up or drops rocks on them. This picture ends when Dig Dug is destroyed.

1. Attract Mode

The attract mode begins when power is applied to the game, after a play or high-score mode, or after self-test. This mode is continuous and stops only when a credit is entered, or when in self-test. This mode may last for about one minute and fifteen seconds. In the attract mode, the screen displays one of four possible pictures.

In the first picture, Dig Dug enters the screen from the top right and walks across the surface. He digs a tunnel into the ground and begins to dig around the words DIG DUG. Meanwhile, monsters escort the word ATARI across the top of the screen. When Dig Dug digs entirely around the words DIG DUG, these words, ATARI and the monsters fall down to a new position on the screen. Everything in the picture rolls up except the words DIG DUG.

In the second picture, game characters appear on the screen. Dig Dug is between FYGAR, the fire-breathing dragon, and POOKA, the fat monster. First, Dig Dug pumps up POOKA until he explodes and disappears, and 200-500 (points) appears in his place. Then, Dig Dug pumps up FYGAR until he explodes and disappears, and 200-1000 appears in his place.

The third picture simulates game play. Dig Dug walks through underground tunnels. Monsters chase him and he periodically pumps them up or drops rocks on them. This picture ends when Dig Dug is destroyed.

The fourth picture shows the high-score table. The top five scores, round played and matching initials appear on the screen.

During the attract mode, the high score and score(s) for one or both players appear at the top of the screen. Credits or number of Dig Dug lives and the round number appear at the bottom of the screen. This mode ends when coins are inserted and accepted for game play.

2. Ready-to-Play Mode

During this mode, the high score and score(s) for one or both players appear at the top of the screen. The words PUSH START BUTTON, 1 PLAYER ONLY or 1 OR 2 PLAYERS and bonus life information appear in the center of the screen. ATARI copyright, credits and the round number appear near the bottom of the screen. This mode ends when a player pushes the start button.

3. Play Mode

This mode begins when Dig Dug enters the screen from the top right and walks across the surface. He digs down to the center of the screen. The words PLAYER 1 READY or PLAYER 2 READY appear on the screen. Also, high score and score(s) for one or both players appears at the top of the screen. The number of Dig Dug lives and the round number appear at the bottom of the screen.

Game play takes place on a cutaway section of the land. The characters are Dig Dug and two monsters, one of which is a fire-breathing dragon. The underground area is divided into four different colored layers of dirt. Rocks are scattered in the dirt. The sky is at the top of the screen.

The player controls Dig Dug. He moves through horizontal and vertical tunnels. When Dig Dug digs new tunnels he moves slowly. When he is on the surface or in an existing tunnel, he moves faster. The object of the game is for Dig Dug to destroy all the monsters and go to the next round.
Monsters are trapped in caves. A monster may get out of a cave two ways. Dig Dug may dig him out. Then, the monster chases Dig Dug. The monster may also get out of the cave by turning into a ghost. As a ghost, he cannot be destroyed. The ghost does not travel in the tunnels. He travels through the dirt, and can travel diagonally. However, he reappears as the monster when he goes into a tunnel.

The monster moves faster than Dig Dug in vertical tunnels and slower on the surface. He destroys Dig Dug by catching him. In addition, the dragon destroys Dig Dug by breathing fire on him. The dragon only breathes fire horizontally. The fire can penetrate the dirt.

Dig Dug destroys the monsters by pumping them up until they burst, or by causing rocks to drop on them. To pump up and destroy a monster, the player presses and holds down the pump button. It is possible to stun a monster for a few seconds by pressing the pump button once or twice. While a monster is stunned, Dig Dug may pass over him without being destroyed. If two monsters are very close together, only one may be stunned. The other will catch and destroy Dig Dug.

Dig Dug must dig tunnels under the rocks to get them to drop. A rock may fall in a vertical or a horizontal tunnel. A rock also goes through a thin layer of dirt from one tunnel to the next. In a vertical tunnel, Dig Dug may stay directly under a rock and it will not drop. However, in a horizontal tunnel, Dig Dug must move out from under a rock right away, or he will be crushed.

After two rocks are dropped, a vegetable (worth extra points) appears in a tunnel in the center of the screen. A player has 10 seconds to capture (touch) the vegetable or it will disappear. There is only one vegetable per round.

The game progresses by rounds. Round 1 starts with four monsters and three rocks. The vegetable is a carrot. One flower on the surface (top right of the screen) represents Round 1. Two flowers represent Round 2, etc. As the rounds progress, the monsters move a little faster, and are better at avoiding falling rocks. In each round, the last monster tries to escape. If he is not caught by Dig Dug, he exits on the surface (top left).

The game ends when all of the Dig Dug lives are used up. A player may continue to play at the same round (level) by following instructions on the screen. He has 16 seconds to insert a coin(s). Then he must push and hold the pump and start buttons at the same time.

4. High Score Mode

This mode begins when a player has one of the five top scores. A player enters his initials in the center of the screen. The initials are then transferred to the table. To reset the high-score table, set the self-test switch to on. Simultaneously push and hold the pump and utility coin switches for 10 seconds. Then set the self-test switch to off.

5. Hints for Game Play

- Get many monsters to follow you. Then dig a long vertical tunnel up to a rock. Drop the rock by digging right or left.
- Dig Dug may take extra time to turn. It is better to start turning early than to wait until the last second.
- Destroy monsters at bottom dirt level for more points.
- Use PUMP to stun monsters. Then you may escape or walk through them.
- Don’t stop next to dragon when he is in a cave. His fire can go through a thin layer of dirt and destroy you.
- A vegetable appears after two rocks have been dropped. So be sure to drop two rocks in each round.
### Table 1-3  Dig Dug™ Scoring

#### Bursting Monsters

<table>
<thead>
<tr>
<th>Dirt Layer</th>
<th>POOKA</th>
<th>FYGAR*</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>200</td>
<td>400</td>
</tr>
<tr>
<td>2</td>
<td>300</td>
<td>600</td>
</tr>
<tr>
<td>3</td>
<td>400</td>
<td>800</td>
</tr>
<tr>
<td>4</td>
<td>500</td>
<td>1000</td>
</tr>
</tbody>
</table>

*Worth 1/4 amount vertically

#### Dropping Rocks

<table>
<thead>
<tr>
<th>Monsters Destroyed</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1000</td>
</tr>
<tr>
<td>2</td>
<td>2500</td>
</tr>
<tr>
<td>3</td>
<td>4000</td>
</tr>
<tr>
<td>4</td>
<td>6000</td>
</tr>
<tr>
<td>5</td>
<td>8000</td>
</tr>
<tr>
<td>6</td>
<td>10,000</td>
</tr>
<tr>
<td>7</td>
<td>12,000</td>
</tr>
<tr>
<td>8</td>
<td>15,000</td>
</tr>
</tbody>
</table>

#### Vegetables

<table>
<thead>
<tr>
<th>Round</th>
<th>Vegetable</th>
<th>Points for Capture</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Carrot</td>
<td>400</td>
</tr>
<tr>
<td>2</td>
<td>Rutabaga</td>
<td>600</td>
</tr>
<tr>
<td>3</td>
<td>Mushroom</td>
<td>800</td>
</tr>
<tr>
<td>4</td>
<td>Cucumber</td>
<td>1000</td>
</tr>
<tr>
<td>5</td>
<td>Cucumber</td>
<td>1000</td>
</tr>
<tr>
<td>6</td>
<td>Eggplant</td>
<td>2000</td>
</tr>
<tr>
<td>7</td>
<td>Eggplant</td>
<td>2000</td>
</tr>
<tr>
<td>8</td>
<td>Bell Pepper</td>
<td>3000</td>
</tr>
<tr>
<td>9</td>
<td>Bell Pepper</td>
<td>3000</td>
</tr>
<tr>
<td>10</td>
<td>Tomato</td>
<td>4000</td>
</tr>
<tr>
<td>11</td>
<td>Tomato</td>
<td>4000</td>
</tr>
<tr>
<td>12</td>
<td>Onion</td>
<td>5000</td>
</tr>
<tr>
<td>13</td>
<td>Onion</td>
<td>5000</td>
</tr>
<tr>
<td>14</td>
<td>Watermelon</td>
<td>6000</td>
</tr>
<tr>
<td>15</td>
<td>Watermelon</td>
<td>6000</td>
</tr>
<tr>
<td>16</td>
<td>Galaxian</td>
<td>7000</td>
</tr>
<tr>
<td>17</td>
<td>Galaxian</td>
<td>7000</td>
</tr>
<tr>
<td>18 and above</td>
<td>Pineapple</td>
<td>8000</td>
</tr>
</tbody>
</table>

*Digging a new tunnel is worth 10 points per 1/8 inch (1.61 cm).*
Troubleshooting

A. Introduction

This game tests itself when the self-test switch is set to the on position. If there is a failure, the game produces audiovisual aids to help you isolate the failing portion of the game. The self-test procedure included in Chapter 1 is to help you decide if the game is or isn't working properly. The expanded procedures in this chapter are included to help the qualified electronic technician determine why the game isn't working properly.

If you are not a qualified technician, do not try to work on the game circuitry or video display. True, it is not earning money when it doesn't work. However, your investment in this game may greatly increase if either the video display and/or game PCB are destroyed while you are working inside the game cabinet. Be assured, it isn't worth it.
B. Comments on Troubleshooting

When troubleshooting, first determine the symptom(s) of the failure. After determining the symptom, look over the wiring diagram and determine what assemblies could cause the failure. Could it be caused by the power supply, Regulator/Audio II PCB, or the video display?

The next step is to check all harness wires and connectors to the suspected failing assembly. If you find no harness or connector problem, substitute an assembly known to be good for the suspected failing assembly. If the game functions properly, you have successfully isolated the failure. If it doesn’t, repeat the procedure with another assembly.

When you have isolated the failing assembly, you must troubleshoot that assembly and make the necessary repairs. If the display is failing, we suggest that a qualified video display technician handle the troubleshooting and repair. If the power supply or Regulator/Audio II PCB is failing, troubleshooting and repair is relatively simple, as these assemblies are not too complicated. If the game PCB is failing, troubleshooting and repair will greatly depend on your understanding of the operation of this PCB.

To effectively troubleshoot problems of the game PCB, it is necessary for you, the technician, to become familiar with the PCB’s hardware. The diagrams in the schematic package (included with the game) show the functions of the circuitry. Again, while troubleshooting this PCB, first determine the symptom of the failure, then locate the suspected area on the schematic diagram.

C. Self-Test Procedure

To enter Self-Test, set the self-test switch to the on position. Patterns appear on the screen. After about 8 seconds, the self-test screen is displayed (see Figure 2-1). See Chapter 1, Section H, Self-Test Procedure for a complete description of this part of the self-test.

NOTE

This procedure does not test the coin door lockout coils. If the self-test passes, but the lockout coils do not energize when the self-test switch is set to off, suspect the lockout coil wiring, coin door harness, game PCB harness, or driver Q5 and related circuitry of the game PCB.

Figure 2-1 Self-Test Screen 1
Test Passes

| RAM OK       |
| ROM OK       |
| UPRIGHT      |
| 1 COIN 1 CREDIT |
| 1 COIN 1 CREDIT |
| DIGDUG 3     |
| RANK B       |
| SOUND 04     |
| 1ST BONUS FOR 100000 PTS |
| 2ND BONUS FOR 400000 PTS |
| AND FOR EVERY 400000 PTS |
Figure 2-2  Self-Test Screen 1
Test Fails

SCREEN 1:

RAM FAILURE is indicated by the word RAM and a pair of alphanumeric characters displayed at the top of the screen. The following table lists the bad RAM chip and its location.

<table>
<thead>
<tr>
<th>Screen Display</th>
<th>Bad RAM chip location on game PCB</th>
</tr>
</thead>
<tbody>
<tr>
<td>RAM 0L</td>
<td>9M</td>
</tr>
<tr>
<td>RAM 0H</td>
<td>9M</td>
</tr>
<tr>
<td>RAM 1L</td>
<td>9M</td>
</tr>
<tr>
<td>RAM 1H</td>
<td>9M</td>
</tr>
<tr>
<td>RAM 2L</td>
<td>9E</td>
</tr>
<tr>
<td>RAM 2H</td>
<td>9JK</td>
</tr>
<tr>
<td>RAM 3L</td>
<td>9H/J</td>
</tr>
<tr>
<td>RAM 3H</td>
<td>9H</td>
</tr>
<tr>
<td>RAM 4L</td>
<td>9F/G</td>
</tr>
<tr>
<td>RAM 4H</td>
<td>9G/H</td>
</tr>
</tbody>
</table>

ROM FAILURE is indicated by the word ROM and a number displayed at the top of the screen. The following table lists the bad ROM chip and its location.

<table>
<thead>
<tr>
<th>Screen Display</th>
<th>Bad ROM chip location on game PCB</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROM 1</td>
<td>6L</td>
</tr>
<tr>
<td>ROM 2</td>
<td>6M</td>
</tr>
<tr>
<td>ROM 3</td>
<td>6N/P</td>
</tr>
<tr>
<td>ROM 4</td>
<td>6R</td>
</tr>
<tr>
<td>ROM 5</td>
<td>6C</td>
</tr>
<tr>
<td>ROM 6</td>
<td>6D</td>
</tr>
<tr>
<td>ROM 7</td>
<td>5L</td>
</tr>
</tbody>
</table>

To go to screen 2, set the self-test switch to off and immediately to on again.

SCREEN 2:

A white crosshatch pattern appears on the screen (see Figure 2-3). Use this pattern for convergence (see the raster-scan video display manual).
In addition to maintenance and repair information, this chapter provides the necessary information for you to order parts for your Dig Dug game. Please note that common hardware has been deleted from most of the parts lists. This includes screws, nuts, washers, bolts, etc.

The parts lists are arranged in alphanumeric order. For example, all "A-" prefix numbers come first. Following this are numbers in sequence evaluated up to the hyphen, namely 00- thru 99-, then 000598-thru approximately 190000-.

When ordering parts, please give the part number, part name, applicable figure number of this manual, and serial number of your game. This will help to avoid confusion and mistakes in your order. We hope the results will be less downtime and more profit from your game.

Atari Customer Service numbers are listed in the front of this manual for your convenience.
A. Cabinet-Mounted Assemblies

Schematics, Self-Test Label & Manuals—
see parts list on following page

Figure 3-1 Cabinet-Mounted Assemblies
Upright Cabinet
### Figure 3-1  Cabinet-Mounted Assemblies, continued

**Upright Cabinet Parts List**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A002465-01</td>
<td>6V Coin Counter</td>
</tr>
<tr>
<td>A037453-03</td>
<td>Strain-Relief Power Cord (U.S.)</td>
</tr>
<tr>
<td>A037454-03</td>
<td>Strain-Relief Power Cord (Austria, Belgium, Chile, Denmark, Finland, France, Germany, Greece, Indonesia, Italy, Netherlands, Norway, Spain, Sweden, and Uruguay)</td>
</tr>
<tr>
<td>A037455-03</td>
<td>Strain-Relief Power Cord (Australia and New Zealand)</td>
</tr>
<tr>
<td>A037470-01</td>
<td>Power On/Off Switch and Mounting Plate Assembly</td>
</tr>
<tr>
<td>A037491-01</td>
<td>Coin Box</td>
</tr>
<tr>
<td>A038004-01</td>
<td>Utility-Switch Panel Harness Assembly</td>
</tr>
<tr>
<td>A038256-01</td>
<td>Cabinet Assembly (includes legs and PCB retainers, but not the rear access panel)</td>
</tr>
<tr>
<td>A038295-01</td>
<td>Main Harness Assembly</td>
</tr>
<tr>
<td>A038297-01</td>
<td>Power Harness Assembly</td>
</tr>
</tbody>
</table>

*The following four items are the technical information supplements to this game:*

- **SP-203** Dig Dug™ Schematic Package
- **ST-203-01** Dig Dug Label with Self-Test Procedure and Option Switch Settings
- **TM-160** Service Manual for 19-Inch Electrohome Color Raster-Scan Display *(Substitute TM-201 when using part no. 92-055, Wells-Gardner 19-Inch Display)*
- **TM-203** Dig Dug Operation, Maintenance and Service Manual

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>19-9032</td>
<td>Volume Control</td>
</tr>
<tr>
<td>62-041</td>
<td>SPDT Momentary-Contact Pushbutton Utility Coin Switch with Black Cap</td>
</tr>
<tr>
<td>69-001</td>
<td>DPDT Self-Test Switch</td>
</tr>
<tr>
<td>71-2110</td>
<td>Panel Cartridge Lock Mechanism (for rear access panel)</td>
</tr>
<tr>
<td>78-3201</td>
<td>Cabinet-Leveling Leg</td>
</tr>
<tr>
<td>78-6900402</td>
<td>Vinyl Foam Single-Coated Adhesive Tape, ¼-Inch Wide × ½-Inch Thick (72 in. required)</td>
</tr>
<tr>
<td>003053-01</td>
<td>Lower Attraction Glass Retainer</td>
</tr>
<tr>
<td>009992-01</td>
<td>On/Off Switch Cover</td>
</tr>
<tr>
<td>034536-02</td>
<td>Foam Vibration Damper (For Regulator/Audio II PCB)</td>
</tr>
<tr>
<td>034536-03</td>
<td>Foam Vibration Damper (For Dig Dug Game PCB)</td>
</tr>
<tr>
<td>036495-01</td>
<td>Speaker Grille</td>
</tr>
<tr>
<td>036498-01</td>
<td>Upper Attraction Glass Retainer</td>
</tr>
<tr>
<td>036686-01</td>
<td>Card of Game Pricing Labels (not shown in illustration)</td>
</tr>
<tr>
<td>037419-02</td>
<td>Rear Access Panel (does not include lock)</td>
</tr>
<tr>
<td>037332-01</td>
<td>Ventilation Grille (located on cabinet top)</td>
</tr>
<tr>
<td>038003-01</td>
<td>Utility Switch Panel for Volume Control, Self-Test Switch, Coin Switch and Coin Counter</td>
</tr>
<tr>
<td>038273-01</td>
<td>Attraction Glass with Graphics</td>
</tr>
<tr>
<td>038274-01</td>
<td>Video Display Shield with Graphics</td>
</tr>
<tr>
<td>178013-001</td>
<td>Spring Draw Latch</td>
</tr>
<tr>
<td>178034-024</td>
<td>¾-Inch Black Plastic T-Molding</td>
</tr>
<tr>
<td>178048-001</td>
<td>2-Inch Rigid Caster</td>
</tr>
</tbody>
</table>

3-3
Figure 3-1  Cabinet-Mounted Assemblies, continued  
Cabaret Cabinet
## Figure 3-1  Cabinet-Mounted Assemblies, continued

### Cabaret Cabinet Parts List

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A002465-01</td>
<td>Coin Counter</td>
</tr>
<tr>
<td>A037453-03</td>
<td>Strain-Relief Power Cord (U.S.)</td>
</tr>
<tr>
<td>A037454-03</td>
<td>Strain-Relief Power Cord (Austria, Belgium, Chile, Denmark, Finland, France, Germany, Greece, Indonesia, Italy, Netherlands, Norway, Spain, Sweden, and Uruguay)</td>
</tr>
<tr>
<td>A037455-03</td>
<td>Strain-Relief Power Cord (Australia and New Zealand)</td>
</tr>
<tr>
<td>A037470-01</td>
<td>Power On/Off Switch and Mounting Plate Assembly</td>
</tr>
<tr>
<td>A037491-01</td>
<td>Coin Box</td>
</tr>
<tr>
<td>A038321-01</td>
<td>Cabinet Assembly (includes PCB retainers and legs, but not rear access panel)</td>
</tr>
<tr>
<td>A038392-01</td>
<td>Main Harness Assembly</td>
</tr>
<tr>
<td>A038393-01</td>
<td>Power Harness Assembly</td>
</tr>
</tbody>
</table>

The following four items are the technical information supplements to this game:

- **SP-203**: Dig Dug™ Schematic Package
- **ST-203-01**: Dig Dug Label with Self-Test Procedure and Option Switch Settings
- **TM-160**: Instruction and Service Manual for 19-Inch Electrohome Color Display *(Substitute TM-201 when using Wells-Gardner Display no. 92-055)*
- **TM-203**: Dig Dug Operation, Maintenance and Service Manual
- **19-9032**: Volume Control
- **69-001**: DPDT Self-Test Switch
- **71-2110**: Panel Cartridge Lock Mechanism *(for rear access panel)*
- **70-3201**: Cabinet-Leveling Leg
- **78-8900402**: Vinyl Foam Single-Coated Adhesive Tape, \(\frac{1}{4}\)-Inch wide \(\times\) \(\frac{1}{4}\)-Inch thick
- **009992-01**: On/Off Switch Cover
- **034535-03**: Foam Vibration Damper *(for both PCBs)*
- **036586-01**: Card of Game Pricing Labels
- **036591-01**: Speaker Grille
- **037495-01**: Bracket for Volume Control, Self-Test Switch and Coin Counter(s)
- **037511-02**: Rear Access Panel *(does not include lock)*
- **037515-01**: Upper Display-Shield Retainer
- **037529-01**: Display Bracket
- **038326-01**: Attraction Panel with Graphics
- **038331-01**: Side Panel Decal *(not shown in illustration)*
- **148001-001**: 6 × 9-Inch 4-Ohm 15W Oval High-Fidelity Speaker
- **176013-001**: Spring Draw Latch
- **176034-024**: Black Plastic T-Molding, \(\frac{3}{4}\)-Inch wide

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35
Figure 3-1  Cabinet-Mounted Assemblies, continued
Cocktail Cabinet
Figure 3-1  Cabinet-Mounted Assemblies, continued
Cocktail Cabinet
### Figure 3-1  Cabinet-Mounted Assemblies, continued

**Cocktail Cabinet Parts List**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A002465-01</td>
<td>Coin Counter</td>
</tr>
<tr>
<td>A005133-01</td>
<td>Cooling Fan  <em>(optional equipment)</em></td>
</tr>
<tr>
<td>A036775-01</td>
<td>Coin Box Assembly <em>(includes lock)</em></td>
</tr>
<tr>
<td>A037246-01</td>
<td>Leg Assembly <em>(includes leg, 2 adjustable feet and 2 endcaps)</em></td>
</tr>
<tr>
<td>A037292-01</td>
<td>Leg Support Assembly <em>(includes 2 panel nuts and endcap)</em></td>
</tr>
<tr>
<td>A037470-01</td>
<td>On/Off Switch and Mounting Plate Assembly</td>
</tr>
<tr>
<td>A037756-02</td>
<td>14-Inch Color Video Display Assembly</td>
</tr>
<tr>
<td>A037884-02</td>
<td>Strain-Relief Power Cord <em>(United Kingdom, Ireland, Lebanon, Saudi Arabia, India, Hong Kong, Singapore, Egypt, Nigeria, Republic of South Africa, Zimbabwe)</em></td>
</tr>
<tr>
<td>A037886-01</td>
<td>Strain-Relief Power Cord <em>(U.S.)</em></td>
</tr>
<tr>
<td>A037887-01</td>
<td>Strain-Relief Power Cord <em>(Austria, Belgium, Chile, Denmark, Finland, France, Germany, Greece, Indonesia, Italy, Netherlands, Norway, Spain, Sweden, and Uruguay)</em></td>
</tr>
<tr>
<td>A037888-01</td>
<td>Strain-Relief Power Cord <em>(Australia and New Zealand)</em></td>
</tr>
<tr>
<td>A038370-01</td>
<td>Cabinet Base Assembly <em>(includes grilles, PCB retainers, leg backplate and hinges)</em></td>
</tr>
<tr>
<td>A038378-01</td>
<td>Main Harness Assembly</td>
</tr>
<tr>
<td>A038380-01</td>
<td>Power Harness Assembly</td>
</tr>
</tbody>
</table>

The following four items are the technical information supplements to this game:

- **SP-203**
  - Dig Dug™ Schematic Package

- **ST-203-02**
  - Dig Dug/Cocktail Label with Self-Test Procedure and Option Switch Settings

- **TM-187**
  - Service Manual for 14-Inch Electrohome Color Raster-Scan Monitor

- **TM-203**
  - Dig Dug Operation, Maintenance and Service Manual

- **19-9032**
  - 50-Ohm, 12½W Wire-Wound Rheostat *(for volume control)*

- **48-004**
  - 8-Ohm, 5W 5-Inch Round High-Fidelity Speaker

- **62-039**
  - Momentary-Contact SPDT Light-Emitting Diode Switch with Red Cap

- **62-041**
  - SPDT Momentary-Contact Pushbutton Utility Coin Switch with Black Cap

- **69-001**
  - DPDT Self-Test Switch

- **71-2110**
  - Panel Cartridge Lock Mechanism *(for table top)*

- **71-3201**
  - Anchor Washer for Table Top Locks

- **74-3003A**
  - #10 × 3/8-Inch Long Aluminum Tubular Spacer *(for table top support)*

- **75-9910N0**
  - 3/8-11 Steel Stamped Nut *(for utility coin switch)*

- **78-3205**
  - Square Black Endcap for Leg Assembly

- **78-3206**
  - Cabinet-Leveling Leg

- **78-6900401**
  - Vinyl Foam Single-Coated Adhesive Tape, ¼-Inch wide × ¾-Inch thick

- **82-406**
  - #14-20 × 2-Inch-Long Eyebolt, with ¼-Inch Threads

- **000869-01**
  - Speaker Grille

- **009952-01**
  - On/Off Switch Cover

- **034536-03**
  - Foam Vibration Damper

- **035851-01**
  - Table Top Hinge

- **035852-01**
  - Corner Bracket for Table Top

- **035867-02**
  - Smoke-Color Acrylic Display Overlay

- **036764-01**
  - Hook-Type Cam for Lock

- **036773-01**
  - Cabinet Base Grille

- **036774-01**
  - Upper End-Panel Grille

- **036895-01**
  - Black Molded Switch Bezel

- **037335-01**
  - Leg Brace

- **037868-01**
  - Cardboard Display Bezel

- **037868-01**
  - Slip-In Cabinet Grille *(above control panel)*

- **037753-01**
  - Coin Acceptor Retaining Bracket

- **037768-01**
  - Fan Grille *(fan is optional—see part no. A005133-01)*

[Continued on next page]
Figure 3-1  Cabinet-Mounted Assemblies, continued
Parts List

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>037791-01</td>
<td>Security Bar</td>
</tr>
<tr>
<td>037792-01</td>
<td>Display Mounting Bracket</td>
</tr>
<tr>
<td>037627-01</td>
<td>Backplate for Attaching Leg</td>
</tr>
<tr>
<td>037633-01</td>
<td>Security Bar Bracket</td>
</tr>
<tr>
<td>037665-01</td>
<td>Bracket for Volume Control, Self-Test and Utility Coin Switches</td>
</tr>
<tr>
<td>038090-01</td>
<td>Video Display L-Clamp</td>
</tr>
<tr>
<td>038354-01</td>
<td>Service Panel</td>
</tr>
<tr>
<td>038365-02</td>
<td>Wood Table Top</td>
</tr>
<tr>
<td>038366-01</td>
<td>Tempered-Glass Table Top with Graphics</td>
</tr>
<tr>
<td>038385-01</td>
<td>Start Switch Mounting Bracket</td>
</tr>
<tr>
<td>178015-001</td>
<td>Hinged Table Top Support</td>
</tr>
<tr>
<td>178034-024</td>
<td>¾-Inch Black Plastic T-Molding (for center cabinet base)</td>
</tr>
<tr>
<td>178034-025</td>
<td>5/32-Inch Black Plastic T-Molding (for cabinet ends)</td>
</tr>
<tr>
<td>178034-026</td>
<td>⅜-Inch Black Plastic T-Molding (for table top)</td>
</tr>
</tbody>
</table>
B. The Control Panel

**WARNING**

Prior to removing or repairing any switch on the control panel, **unplug the game.**

**To Open the Control Panel**

*Upright and Cabaret Cabinets:*

1. Open the coin door. Reach up through the opening and release the spring-draw latches. They are on the cabinet side walls at each end of the control panel.
2. Lift up on the control panel at the top edge, and tilt it toward you. The display shield has foam tape applied to it to cushion the shield and prevent liquids from entering the cabinet interior. Make sure this tape is in good condition.

*Cocktail Cabinet:*

3. Remove the two sets of button-head screws and lock washers at the top edge of the control panel. Then, tilt the control panel toward you.

**Leaf Switch Repair:**

- Adjust the leaf switches for a narrow gap. When a switch button is depressed, the resulting wiping action of the cross-bar contacts provides a self-cleaning feature. **Don't burnish the contacts.** To clean them, use electrical contact cleaner.

- To replace a leaf switch, remove the screw with a Phillips-head screwdriver.
- To replace the switch button, turn the stamped nut with a wrench in a counterclockwise direction, as seen from the inside of the control panel. The ring on the outside of the control panel should not spin, due to its design.
- Reinstall the switch. Reconnect the harness wires as shown in the Schematic Package, Game Wiring Diagram. Make certain the right colors go to the right tabs on the switch.

**LED Start-Switch Replacement:**

The LED switches have a very low failure rate. If a switch should ever be suspect, first test it using the directions that follow.

**To Test LED Switch:**

- Remove the wires from the suspected switch.
- Attach the leads of an ohmmeter to normally open and common contacts.
- Check contacts (push and release the switch button) for closed and open continuity.
- If the contacts do not operate sharply or always remain closed or open, then replace the LED switch.

**To Replace LED Switch:**

- Remove all wires from the faulty switch.
- Turn the switch counterclockwise while holding the black cone-shaped bushing on the outside of the control panel.
- Install a new switch using the reverse procedure.
- Reconnect the harness wires as shown.

---

**Figure 3-2 The Control Panel**

---

3-11
Players may receive an electric shock if this control panel is not properly grounded! After servicing any parts on the panel, check that the ground wire is firmly attached to the metal tab on the inside of the control panel. Only then should you lock up the game.

NOTE
Cocktail cabinet LED is on a separate panel (not shown in this illustration).

Figure 3-3 Control Panel Assembly
## Figure 3-3  Control Panel Assembly, continued

### Parts List

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Upright Cabinet</strong></td>
<td></td>
</tr>
<tr>
<td>A038269-01</td>
<td>Control Panel with Decal</td>
</tr>
<tr>
<td>A038270-01</td>
<td>Control Panel Assembly</td>
</tr>
<tr>
<td>A038299-01</td>
<td>Control Panel Harness Assembly</td>
</tr>
<tr>
<td>038267-01</td>
<td>Control Panel</td>
</tr>
<tr>
<td>038268-04</td>
<td>Control Panel Decal</td>
</tr>
<tr>
<td><strong>Cabaret Cabinet</strong></td>
<td></td>
</tr>
<tr>
<td>A038299-01</td>
<td>Control Panel Harness Assembly</td>
</tr>
<tr>
<td>A038322-01</td>
<td>Control Panel with Decal</td>
</tr>
<tr>
<td>A038323-01</td>
<td>Control Panel Assembly</td>
</tr>
<tr>
<td>78-6900402</td>
<td>Vinyl Foam Single-Coated Adhesive Tape, ¼-Inch wide × ¼-Inch thick (24 in. required)</td>
</tr>
<tr>
<td>038324-01</td>
<td>Control Panel</td>
</tr>
<tr>
<td>038325-01</td>
<td>Control Panel Decal</td>
</tr>
<tr>
<td><strong>Cocktail Cabinet</strong></td>
<td></td>
</tr>
<tr>
<td>A038369-01</td>
<td>Control Panel Assembly</td>
</tr>
<tr>
<td>A038369-01</td>
<td>Control Panel with Decal</td>
</tr>
<tr>
<td>A038382-01</td>
<td>Control Panel Harness Assembly</td>
</tr>
<tr>
<td>038367-04</td>
<td>Control Panel Decal</td>
</tr>
<tr>
<td>038376-01</td>
<td>Control Panel</td>
</tr>
<tr>
<td><strong>For Upright, Cabaret, and Cocktail Cabinets</strong></td>
<td></td>
</tr>
<tr>
<td>75-9910N0</td>
<td>#8-11 Steel Stamped Nut</td>
</tr>
<tr>
<td>62-039</td>
<td>SPDT Momentary Pushbutton Start Switch with Red Light-Emitting Diode</td>
</tr>
<tr>
<td>036895-01</td>
<td>Black Molded Switch Bezel</td>
</tr>
<tr>
<td>160013-001</td>
<td>Leaf Switch and Button Holder (leaf switch only is part no. 160012-001)</td>
</tr>
<tr>
<td>171016-001</td>
<td>Joystick Assembly</td>
</tr>
<tr>
<td>178030-003</td>
<td>Black Pushbutton Assembly</td>
</tr>
</tbody>
</table>
**WARNING**

Prior to removing or repairing the joystick, unplug the game.

**To Repair the Joystick:**

1. First, remove the entire joystick assembly from the control panel (see Figure 3-3). Now locate the four screws in the plastic joystick frame and remove these screws.

2. Next, remove the clip ring from the bottom of the shaft. The assembly will come apart.

3. To replace the bellows, pry it up and out of the plastic frame.
   - Reassemble in reverse order.
   - Note that the inner raised ring on the bellows is longer on one side. This side goes on the top of the assembly (toward the control knob).

4. To replace a leaf switch, you don’t need to disassemble the joystick.
   - Using your thumbs, pry apart the plastic flanges on the switch holder. With your index finger, lift the switch up so that it will clear the plastic tab located on the outside end of the switch holder.
   - Slide the switch out of its holder. Replace the switch in reverse order. Adjust the switch for a narrow gap.

---

Disassemble in the order indicated. (Circled numbers match the numbered instructions.)

**Figure 3-4 Joystick Assembly**
**Figure 3-4  Joystick Assembly, continued**

**Parts List**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A038404-01</td>
<td>Joystick Harness</td>
</tr>
<tr>
<td>73-3003</td>
<td>Retaining Ring</td>
</tr>
<tr>
<td>82-AL616</td>
<td>#6 x 1-inch Cross-Recessed Pan-Head Type BT Tapping Steel Screw</td>
</tr>
<tr>
<td>99-080025</td>
<td>Leaf Switch</td>
</tr>
<tr>
<td>99-080026</td>
<td>2-inch Black Plastic Washer</td>
</tr>
<tr>
<td>99-080027</td>
<td>Nylon Switch Actuator</td>
</tr>
<tr>
<td>99-080028</td>
<td>Metal Shaft</td>
</tr>
<tr>
<td>99-080029</td>
<td>Nylon Washer</td>
</tr>
<tr>
<td>99-080030</td>
<td>Spring</td>
</tr>
<tr>
<td>99-080031</td>
<td>Bellows</td>
</tr>
<tr>
<td>99-080032</td>
<td>Flat Steel Washer</td>
</tr>
<tr>
<td>99-080033</td>
<td>Plastic Guard Actuator</td>
</tr>
<tr>
<td>99-080034</td>
<td>Switch Mounting Plate</td>
</tr>
<tr>
<td>99-080035</td>
<td>Top Plate</td>
</tr>
<tr>
<td>171016-001</td>
<td>Joystick Assembly</td>
</tr>
</tbody>
</table>
C. Fluorescent Tube and Speaker

To Replace Fluorescent Tube:

1. At the top front of the game, remove the three screws that secure the upper attraction-panel retainer to the cabinet. Loosen the three screws that secure the lower retainer to the cabinet. Lift the attraction panel up and out of its lower retainer.
2. Remove the cardboard locking tab at each end of the tube.
3. Slightly rotate the tube up or down, and carefully remove it from the lampholders. Replace with a new tube. Do not snap the tube in vigorously—*you may break it, causing an implosion!* Replace the locking tabs.
4. Check that the green ground wire is securely attached to the large metal bracket and the ballast transformer on the wood panel. If the tube is not grounded, it may not start.

To Replace Speaker:

5. Remove the two Phillips screws that secure the light board to the cabinet. Slide the board out and unplug the 5-pin harness connector. Remove the board from the cabinet.
6. Unplug the two plug-in connectors on the speaker. Remove the hardware that attaches the speaker to the board. Replace the speaker, reattach the plug-in connectors, reinstall the wood board and reconnect the harness.

Disassemble in the order indicated. (Circled numbers match the numbered instructions.)
To ensure that the fluorescent tube starts, make sure the green ground wire is firmly attached to both the ballast transformer and the steel lamp bracket.

Figure 3-5  Fluorescent Tube and Speaker, continued
Upright Cabinet
Parts List

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A037417-01 &amp; -02</td>
<td>Fluorescent Tube and Speaker Assembly</td>
</tr>
<tr>
<td>A037457-01</td>
<td>Light and Speaker Harness</td>
</tr>
<tr>
<td>A037540-01</td>
<td>Ground Wire with Ring Lug</td>
</tr>
<tr>
<td>70-304</td>
<td>18-inch 15W Cool White Fluorescent Tube</td>
</tr>
<tr>
<td>79-561816P</td>
<td>Spring-Connector Wire Nut for 16- to 18-Gauge Wires</td>
</tr>
<tr>
<td>99-11003</td>
<td>Fluorescent Lamp Starter</td>
</tr>
<tr>
<td>99-11006</td>
<td>Fluorescent Lamp Locking Tab  (tab consists of two pieces)</td>
</tr>
<tr>
<td>99-11009</td>
<td>Starter Socket</td>
</tr>
<tr>
<td>037469-01</td>
<td>Steel Lamp Bracket</td>
</tr>
<tr>
<td>142028-001</td>
<td>60 Hz 118V Ballast Transformer  (used on A037417-01 assembly)</td>
</tr>
<tr>
<td>142028-002</td>
<td>50 Hz 118V Ballast Transformer  (used on A037417-02 assembly)</td>
</tr>
<tr>
<td>148001-001</td>
<td>6 x 9-Inch 4-Ohm 15W Oval High-Fidelity Speaker</td>
</tr>
<tr>
<td>179035-001</td>
<td>2-Pin Fluorescent Lampholder</td>
</tr>
</tbody>
</table>
D. Video Display

WARNING

Shock Hazard

The following procedure should only be performed by a qualified service technician. Prior to removing or repairing the video display, unplug the game. As an extra precaution, we highly recommend you discharge the high voltage from the picture tube.

High voltages may exist in any video display, even with power disconnected. Use extreme caution and do not touch electrical parts of the display yoke area with your hands or with metal objects in your hands!

Implosion Hazard

If you drop the display and the picture tube breaks, it will implode! Shattered glass and the yoke can fly 6 feet or more from the implosion. Use care when replacing any display.

To Remove Video Display

Upright and Cabaret Cabinets:

1. Unplug the game. Open the rear access panel. Unplug the three display harness connectors, and disconnect the ground wire.

2. Remove the wood screw and flat washer used to secure the rear of the Upright display chassis to a wood cleat. Remove the hex nut, flat washer and carriage bolt used to secure the Cabaret display chassis to a metal bracket.

3. Open control panel (see Figure 3-2, The Control Panel). For the Cabaret cabinet, remove the upper display-shield retainer.

4. Remove the video display shield.

5. Carefully remove the cardboard bezel.

6. Remove the four sets of hardware that secure the display chassis to the wood frame.

7. Carefully pull the display out through the front of the cabinet. Service the display and reinstall in reverse order.

To Remove Video Display

Cocktail Cabinet:

1. Unplug the game. Unlock and open the table top and access panel (see Chapter 1, Section B).

2. Reach through the access panel opening and unplug the three display harness connectors underneath the display. Disconnect the ground wire.

3. Seven screws (four Pan-Head and three Phillips-Head) and three L-clamps hold the display assembly to the cabinet. Remove the screws and the L-clamps.

4. Carefully lift the display assembly up and out of the cabinet. Service the display and reinstall in reverse order.

Figure 3-6  Video Display

Upright and Cabaret Cabinets
Disassemble in the order indicated. (Circled numbers match the numbered instructions.)

Figure 3-6  Video Display, continued
Cocktail Cabinet

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Upright Cabinet</strong></td>
<td></td>
</tr>
<tr>
<td>92-049</td>
<td>19-Inch Electrohome Color Raster-Scan Video Display</td>
</tr>
<tr>
<td></td>
<td>Acceptable substitute is part no.</td>
</tr>
<tr>
<td></td>
<td>92-055—use with TM-201</td>
</tr>
<tr>
<td>038274-01</td>
<td>Display Shield with Graphics</td>
</tr>
<tr>
<td>037443-03</td>
<td>Display Bezel</td>
</tr>
<tr>
<td><strong>Cabaret Cabinet</strong></td>
<td></td>
</tr>
<tr>
<td>92-049</td>
<td>19-Inch Electrohome Color Raster-Scan Video Display</td>
</tr>
<tr>
<td></td>
<td>Acceptable substitute is part no.</td>
</tr>
<tr>
<td></td>
<td>92-055—use with TM-201</td>
</tr>
<tr>
<td>037515-01</td>
<td>Upper Display-Shield Retainer</td>
</tr>
<tr>
<td>037517-01</td>
<td>Display Bezel</td>
</tr>
<tr>
<td>037529-01</td>
<td>Display Bracket</td>
</tr>
<tr>
<td>038327-01</td>
<td>Display Shield with Graphics</td>
</tr>
<tr>
<td><strong>Cocktail Cabinet</strong></td>
<td></td>
</tr>
<tr>
<td>A037541-01</td>
<td>Display Adaptor Harness</td>
</tr>
<tr>
<td>A037756-02</td>
<td>14-Inch Color Video Display Assembly</td>
</tr>
<tr>
<td>92-056</td>
<td>14-Inch Color Electrohome Raster-Scan Video Display, model GO7-910</td>
</tr>
<tr>
<td>037732-01</td>
<td>Display Mounting Bracket</td>
</tr>
<tr>
<td>038090-01</td>
<td>L-Clamp</td>
</tr>
</tbody>
</table>
E. Coin Doors

Figure 3.7  Vertical-Mounted Coin Door
Upright and Cabaret Cabinets
Figure 3-7  Vertical-Mounted Coin Door, continued
Upright and Cabaret Cabinets
<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A037491-01</td>
<td>Coin Box (Not included in assembly)</td>
</tr>
<tr>
<td>A037542-01</td>
<td>Harness Assembly</td>
</tr>
<tr>
<td>71006-035</td>
<td>Metal Coin Mechanism</td>
</tr>
<tr>
<td>72-1405S</td>
<td>#4-40 x 3/8-Inch Cross-Recessed Pan-Head Steel Machine Screw</td>
</tr>
<tr>
<td>72-1414S</td>
<td>#4-40 x 3/8-Inch Cross-Recessed Pan-Head Steel Machine Screw</td>
</tr>
<tr>
<td>75-055</td>
<td>#6 Internal-Tooth Zinc-Plated Steel Lock Washer</td>
</tr>
<tr>
<td>75-914S</td>
<td>#4-40 Steel Machine Hex Nut</td>
</tr>
<tr>
<td>75-3414S</td>
<td>#4-40 x 3/8-Inch Cross-Recessed Flat-Head Steel Machine Screw</td>
</tr>
<tr>
<td>99-15001</td>
<td>Coin Return Button with U.S. 25¢ Price Plate</td>
</tr>
<tr>
<td>99-15002</td>
<td>Coin Return Button with U.S. $1 Price Plate</td>
</tr>
<tr>
<td>99-15003</td>
<td>Coin Return Button with German 1 DM Price Plate</td>
</tr>
<tr>
<td>99-15004</td>
<td>Coin Return Button with German 2 DM Price Plate</td>
</tr>
<tr>
<td>99-15005</td>
<td>Coin Return Button with German 5 DM Price Plate</td>
</tr>
<tr>
<td>99-15006</td>
<td>Coin Return Button with Belgian 5 Fr Price Plate</td>
</tr>
<tr>
<td>99-15007</td>
<td>Coin Return Button with French 1 Fr Price Plate</td>
</tr>
<tr>
<td>99-15008</td>
<td>Coin Return Button with Japanese 100 Yen Price Plate</td>
</tr>
<tr>
<td>99-15009</td>
<td>Coin Return Button with British 10 Pence Price Plate</td>
</tr>
<tr>
<td>99-15010</td>
<td>Coin Return Button with Australian 20¢ Price Plate</td>
</tr>
<tr>
<td>99-15011</td>
<td>Coin Return Button with Italian 100 Lire Price Plate</td>
</tr>
<tr>
<td>99-15025</td>
<td>Left Half of Coin Inlet</td>
</tr>
<tr>
<td>99-15026</td>
<td>Right Half of Coin Inlet</td>
</tr>
<tr>
<td>99-15027</td>
<td>Side Plate of Coin Return Box</td>
</tr>
<tr>
<td>99-15028</td>
<td>Base Plate of Coin Return Box</td>
</tr>
<tr>
<td>99-15029</td>
<td>Switch Bracket</td>
</tr>
<tr>
<td>99-15030</td>
<td>Flap for Lockout Coil (U.S. 25¢)</td>
</tr>
<tr>
<td>99-15036</td>
<td>Metal Coin Return Cover</td>
</tr>
<tr>
<td>99-15037</td>
<td>Switch Adjuster</td>
</tr>
<tr>
<td>99-15038</td>
<td>Bezel for Coin Return Button</td>
</tr>
<tr>
<td>99-15039</td>
<td>Metal Bezel for Coin Return Cover</td>
</tr>
<tr>
<td>99-15040</td>
<td>Coin Return Lever</td>
</tr>
<tr>
<td>99-15041</td>
<td>Lockout Coil</td>
</tr>
<tr>
<td>99-15042</td>
<td>Coin Switch for U.S. 25¢</td>
</tr>
<tr>
<td>99-15052</td>
<td>Spring for Coin Return Button</td>
</tr>
<tr>
<td>99-15053</td>
<td>Spring for Lockout Coil</td>
</tr>
<tr>
<td>99-15054</td>
<td>Pivot for Coin Return Lever</td>
</tr>
<tr>
<td>99-15055</td>
<td>Retaining Screw</td>
</tr>
<tr>
<td>99-15056</td>
<td>Screw for Both Bezels</td>
</tr>
<tr>
<td>99-15060</td>
<td>Switch Cover</td>
</tr>
<tr>
<td>99-15063</td>
<td>Screw for Hinge</td>
</tr>
<tr>
<td>99-15065</td>
<td>Clamp for Frame</td>
</tr>
<tr>
<td>99-15066</td>
<td>Screw for Clamp</td>
</tr>
<tr>
<td>99-15067</td>
<td>Lock Assembly</td>
</tr>
<tr>
<td>99-15070</td>
<td>Door and Frame</td>
</tr>
<tr>
<td>170000-001</td>
<td>6.3V Miniature Wedge Base Incandescent Lamp</td>
</tr>
<tr>
<td>179047-001</td>
<td>Lamp Base</td>
</tr>
</tbody>
</table>
Figure 3-8 Double Coin Acceptor/Mount Assembly
Cocktail Cabinet
### Part No. | Description
--- | ---
A03693-01 | U.S. 25¢/25¢ Coin Door
A03693-02 | U.S. 50¢/50¢ Coin Door
A03693-03 | British 10 P/10 P Coin Door
A03693-04 | British 10 P/50 P Coin Door
A03693-05 | British 20 P/50 P Coin Door
A03693-06 | German 1 DM/1 DM Coin Door
A03693-07 | German 2 DM/1 DM Coin Door
A03693-08 | German 2 DM/5 DM Coin Door
A03693-09 | German 1 DM/5 DM Coin Door
A03693-10 | Belgian 5 Fr/5 Fr Coin Door
A03693-11 | French 1 Fr/1 Fr Coin Door
A03693-12 | French 2 Fr/1 Fr Coin Door
A03693-13 | Swedish 1 Kr/1 Kr Coin Door
A03693-14 | Hong Kong 51/61 Coin Door
A03693-15 | Canadian 25¢/25¢ Coin Door
A03693-16 | Spanish 25 Pts/25 Pes Coin Door
A03693-17 | Swiss 1 Fr/1 Fr Coin Door
A03693-18 | Italian 100 L/100 L Coin Door
A03693-19 | Japanese 100 Y/100 Y Coin Door
A03693-20 | Australian 20¢/20¢ Coin Door

**Figure 3-8** Double Coin Acceptor/Mount Assembly, continued

**Cocktail Cabinet Parts List**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A03693-01</td>
<td>Double Coin Acceptor Harness Assy.</td>
</tr>
<tr>
<td>99-15001</td>
<td>Coin Return Button with U.S. 25¢ Price Plate</td>
</tr>
<tr>
<td>99-15002</td>
<td>Coin Return Button with U.S. $1 Price Plate</td>
</tr>
<tr>
<td>99-15003</td>
<td>Coin Return Button with German 1 DM Price Plate</td>
</tr>
<tr>
<td>99-15004</td>
<td>Coin Return Button with German 2 DM Price Plate</td>
</tr>
<tr>
<td>99-15005</td>
<td>Coin Return Button with German 5 DM Price Plate</td>
</tr>
<tr>
<td>99-15006</td>
<td>Coin Return Button with Belgian 5 Fr Price Plate</td>
</tr>
<tr>
<td>99-15007</td>
<td>Coin Return Button with French 1 Fr Price Plate</td>
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<td>99-15008</td>
<td>Coin Return Button with Japanese 100 Yen Price Plate</td>
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<td>99-15009</td>
<td>Coin Return Button with British 10 Pence Price Plate</td>
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<td>99-15010</td>
<td>Coin Return Button with Australian 20¢ Price Plate</td>
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<td>99-15011</td>
<td>Coin Return Button with Italian 100 Lire Price Plate</td>
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<td>Coin Return Button with U.S. 50¢ (2 x 25¢) Price Plate</td>
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<td>Coin Return Button with British 20 Pence Price Plate</td>
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<td>99-15017</td>
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<td>99-15022</td>
<td>Dual-Entry Face Plate</td>
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<td>99-15023</td>
<td>Single-Entry Base Plate</td>
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<td>99-15025</td>
<td>Left Half of Coin Inlet</td>
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<tr>
<td>99-15026</td>
<td>Right Half of Coin Inlet</td>
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<td>99-15027</td>
<td>Side Plate of Coin Return Box</td>
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<td>99-15028</td>
<td>Base Plate of Coin Return Box</td>
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<td>99-15029</td>
<td>Switch Bracket</td>
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<td>99-15030</td>
<td>Flap for Lockout Coil (U.S. 25¢)</td>
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<td>99-15036</td>
<td>Coin Return Cover</td>
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<td>99-15037</td>
<td>Switch Adjuster</td>
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<td>99-15038</td>
<td>Bezel for Coin Return Button</td>
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<td>99-15039</td>
<td>Bezel for Coin Return Cover</td>
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<td>99-15040</td>
<td>Coin Return Lever</td>
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<td>99-15041</td>
<td>Lockout Coil</td>
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<td>99-15042</td>
<td>Coin Switch for U.S. 25¢</td>
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<td>99-15051</td>
<td>Lamp Holder</td>
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<td>99-15052</td>
<td>Spring for Coin Return Button</td>
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<tr>
<td>99-15053</td>
<td>Spring for Lockout Coil</td>
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<tr>
<td>99-15054</td>
<td>Pivot for Coin Return Lever</td>
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<td>99-15055</td>
<td>Retaining Screw</td>
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<td>99-15056</td>
<td>Screw for Both Bezels</td>
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<tr>
<td>99-15060</td>
<td>Switch Cover</td>
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</table>
F. Printed-Circuit Boards

**WARNING**
Prior to removing or repairing any printed-circuit board, unplug the game.

**To Remove Printed-Circuit Boards:**
1. Open the rear access panel on the Upright and Cabaret cabinets. Open the table top on the Cocktail cabinet.
2. Locate the hardware that secures the PCB to the cabinet. Remove and save this hardware. (The Cocktail cabinet Regulator/Audio II PCB has no securing hardware.)
3. If you are removing the game board, first remove the tie wraps that fasten the edge connector to that board. Then unplug the edge connector. If you are removing the Regulator/Audio II PCB, disconnect the three small harness connectors on this board.
4. Carefully slide the PCB straight out of its retainers. (For the Upright cabinet, slide and lift the Regulator/Audio II PCB out of its slot.) Be careful not to twist the boards, as this may loosen connections or components. Repair as required.

**To Replace Printed-Circuit Boards:**
- Reinstall the PCB, making sure that the connectors are properly plugged in. Note that they are keyed to fit only one way, so if they don't slip on easily, don't force them. A reversed connector will probably damage your game and void the warranty.
- Replace the hardware that secures the PCB to the cabinet wall. Close and lock the rear access panel or table top.
- Check that the operation of the game is correct by performing the self-test. This is very important when you repair a PCB. Unless you are a qualified technician, do not turn the small knob on the Regulator/Audio II PCB.

---

Figure 3-9  Printed-Circuit Board Removal
### Figure 3-10 Dig Dug™ Game PCB Assembly, continued

#### Parts List

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>(Reference Designations and Locations in Bold)</th>
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<tbody>
<tr>
<td>A038156-01</td>
<td>Dig Dug Game PCB Assembly</td>
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<tr>
<td>24-250106</td>
<td>10 ( \mu )F 25V Aluminum Electrolytic Fixed Axial-Lead Capacitor (C9, 12)</td>
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<tr>
<td>24-250107</td>
<td>100 ( \mu )F 25V Aluminum Electrolytic Fixed Axial-Lead Capacitor (C1)</td>
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<tr>
<td>24-500476</td>
<td>47 ( \mu )F 50V Aluminum Electrolytic Fixed Axial-Lead Capacitor (C4-7)</td>
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<td>29-088</td>
<td>.1 ( \mu )F 25V Ceramic-Disc Radial-Lead Capacitor (C2, 3, 8, 31-69)</td>
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<td>31-1N4002</td>
<td>Type-1N4002 100V Switching Diode (CR2-4)</td>
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<td>31-1N914</td>
<td>Type-1N914 75V Switching Diode (CR6, 7)</td>
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<td>Type-2N3904 NPN 60V 1W Transistor (Q1, 2)</td>
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<td>34-2N6044</td>
<td>Type-2N6044 Darlington NPN Transistor (Q3-5)</td>
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<td>37-4066</td>
<td>Type-4066 Quad Analog Switch Integrated Circuit (2L)</td>
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<td>37-7406</td>
<td>Type-7406 Integrated Circuit (5C)</td>
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<td>37-74LS00</td>
<td>Type-74LS00 Integrated Circuit (4R)</td>
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<td>Type-74LS08 Integrated Circuit (7H)</td>
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<td>Type-74LS20 Integrated Circuit (1H, 3P)</td>
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<tr>
<td>37-74LS32</td>
<td>Type-74LS32 Integrated Circuit (5E, 6F, 5G/H)</td>
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<tr>
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<td>Type-74LS74 Integrated Circuit (6H/J, 3R)</td>
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<td>37-74LS86</td>
<td>Type-74LS86 Integrated Circuit (4A, 4B, 5B, 9C)</td>
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<td>37-74LS139</td>
<td>Type-74LS139 Integrated Circuit (8/9A, 5D, 5F, 6H)</td>
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<tr>
<td>37-74LS157</td>
<td>Type-74LS157 Integrated Circuit (9A, 10A, 4K, 4M)</td>
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<tr>
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<td>Type-74LS161 Integrated Circuit (3F, 4F, 3H, 4N)</td>
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<td>Type-74LS166 Integrated Circuit (8N)</td>
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<tr>
<td>37-74LS174</td>
<td>Type-74LS174 Integrated Circuit (5A, 10H/J, 2M/N)</td>
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<td>Type-74LS175 Integrated Circuit (9E)</td>
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<td>37-74LS241</td>
<td>Type-74LS241 Integrated Circuit (10J/K)</td>
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<td>Type-74LS244 Integrated Circuit (4E)</td>
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<tr>
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<td>Type-74LS245 Integrated Circuit (8F, 8G, 8H, 8M)</td>
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<tr>
<td>37-74LS259</td>
<td>Type-74LS259 Integrated Circuit (1G/H, 5M/N)</td>
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<td>Type-74LS273 Integrated Circuit (9B, 1L, 10M/N, 9R)</td>
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<td>37-74LS367</td>
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<td>37-74LS374</td>
<td>Type-74LS374 Integrated Circuit (10E/F)</td>
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<td>Type-74LS377 Integrated Circuit (4D)</td>
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<td>37-74LS393</td>
<td>Type-74LS393 Integrated Circuit (4C)</td>
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<td>37-74S04</td>
<td>Type-74S04 Integrated Circuit (3A)</td>
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<td>37-LM324</td>
<td>Type-LM324 Integrated Circuit (3D/E)</td>
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<td>39-MV5053</td>
<td>Type-MV5053 Light-Emitting Diode (CR1)</td>
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<tr>
<td>62-001</td>
<td>SPST Momentary Pushbutton Switch (SW1)</td>
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<tr>
<td>66-118P1T</td>
<td>8-Station Single-Throw, Dual-Inline-Package Switch (2C, 2C/D)</td>
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<tr>
<td>72-6810S</td>
<td>#8 x ( \frac{3}{8} ) Inch Cross-Recessed Pan-Head Screw  (for mounting PCB to cabinet wall)</td>
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<tr>
<td>78-24012</td>
<td>5-Inch Beaded Nylon Tie Wrap</td>
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<td>79-42C22</td>
<td>22-Contact Medium-Insertion-Force Integrated Circuit Socket (10G)</td>
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<tr>
<td>79-42C24</td>
<td>24-Contact Medium-Insertion-Force Integrated Circuit Socket (7A/B, 8A/B, 6C–8C, 10C/D, 6D, 5L, 6L, 6M, 9M, 9N, 6N/P, 6R, 8R)</td>
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<tr>
<td>79-42C28</td>
<td>28-Contact Medium-Insertion-Force Integrated Circuit Socket (10B, 8D, 2E, 8J, 1K, 9K, 8K/L, 5R, 7R)</td>
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<td>79-42C40</td>
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<tr>
<td>79-42C42</td>
<td>42-Contact Medium-Insertion-Force Integrated Circuit Socket (1/2C, 1/2E)</td>
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</table>

[Continued on next page]
### Figure 3–10  Dig Dug™ Game PCB Assembly, continued

#### Parts List

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>(Reference Designations and Locations in Bold)</th>
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<tbody>
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<td>81-4302</td>
<td>Nylon Snap-In Fastener</td>
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<td>90-7005</td>
<td>Random-Access Memory (3K, 3N)</td>
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<td>110005-101</td>
<td>100 Ohm, ±5%, 1/4W Resistor (R80, 176)</td>
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<td>22K Ohm, ±5%, 1/4W Resistor (R103)</td>
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<td>330 Ohm, ±5%, 1/4W Resistor (R8, 9)</td>
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<td>470 Ohm, ±5%, 1/4W Resistor (R72, 74, 77, 97)</td>
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<td>4.7K Ohm, ±5%, 1/4W Resistor (R20–23, 100)</td>
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<td>47K Ohm, ±5%, 1/4W Resistor (R102)</td>
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<td>.22 µF 25V Ceramic Disc Radial-Lead Capacitor (C13)</td>
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<td>100 pF 100V Epoxy-Dipped Radial-Lead Mica Capacitor (C10, 69)</td>
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<td>Programmable Read-Only Memory (8A/B)</td>
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<td>Programmable Read-Only Memory (7A/B)</td>
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<td>Type-74LS107 Integrated Circuit (1J/K, 2R)</td>
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<tbody>
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<td>137177-001</td>
<td>Type-74LS138 Integrated Circuit</td>
<td>3B/C, 2G/H, 10N/P</td>
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<td>Multi-CPU Bus Controller Custom Chip 08</td>
<td>8D, 8J, 8K/L</td>
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<td>137187-001</td>
<td>Coin and I/O Controller Custom Chip 51</td>
<td>1/2E</td>
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<td>137188-001</td>
<td>Steering Controller Custom Chip 53</td>
<td>1/2C</td>
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<td>137189-001</td>
<td>Video Ram Addresser Custom Chip 00</td>
<td>7R</td>
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<td>137190-001</td>
<td>Universal Shift Register Custom Chip 02</td>
<td>10B</td>
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<td>137191-001</td>
<td>Motion Object Controller Custom Chip 04</td>
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<td>137192-001</td>
<td>Controller Custom Chip 06</td>
<td>2E</td>
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<td>137193-001</td>
<td>Sync Generator Custom Chip 07</td>
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<td>3G, 4J</td>
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<td>2H/J, 10L/M, 10R</td>
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<td>Type-74128 Integrated Circuit</td>
<td>3A/B</td>
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<td>Type-74LS158 Integrated Circuit</td>
<td>3M</td>
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<td>137204-001</td>
<td>Type-74LS283 Integrated Circuit</td>
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<td>Type-74S174 Integrated Circuit</td>
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<td>Static Random-Access Memory</td>
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<td>18.432 MHz Crystal</td>
<td>Y1</td>
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<tr>
<td>179051-001</td>
<td>Test Point</td>
<td>Acceptable substitute is part no. 020670-01</td>
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Figure 3-11  Regulator/Audio II PCB Assembly
### Figure 3-11  Regulator/Audio II PCB Assembly

**Parts List**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>Location in Bold</th>
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<tbody>
<tr>
<td>A035435-01</td>
<td>Regulator/Audio II PCB Assembly</td>
<td>Acceptable substitute is part no. A035435-02 thru 04.</td>
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<tr>
<td>19-100P1015</td>
<td>.1 Ohm, ± 3%, 7W Wirewound Resistor</td>
<td>(R24)</td>
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<td>19-315102</td>
<td>1K Ohm Vertical PCB-Mounting Cermic Trimpot</td>
<td>(R8) Acceptable substitute is part no. 119002-102.</td>
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<tr>
<td>24-250108</td>
<td>1000 μF 25V Aluminum Electrolytic Fixed Axial-Lead Capacitor</td>
<td>(C13)</td>
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<tr>
<td>24-250477</td>
<td>470 μF 25V Aluminum Electrolytic Fixed Axial-Lead Capacitor</td>
<td>(C1, 4, 12)</td>
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<tr>
<td>24-350338</td>
<td>3300 μF 35V Aluminum Electrolytic Fixed Axial-Lead Capacitor</td>
<td>(C9, 10)</td>
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<tr>
<td>29-088</td>
<td>.1 μF 25V Ceramic-Disc Radial-Lead Capacitor</td>
<td>(C3, 11)</td>
</tr>
<tr>
<td>31-1N4002</td>
<td>Type-1N4002 100V 1-Amp. Silicon Rectifier Diode</td>
<td>(CR1, 4)</td>
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<tr>
<td>33-TIP32</td>
<td>Type-TIP32 PNP Power Transistor</td>
<td>(Q2)</td>
</tr>
<tr>
<td>34-2N3055</td>
<td>Type-2N3055 NPN Silicon Transistor</td>
<td>(Q3)</td>
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<tr>
<td>37-LM305</td>
<td>5V Linear Voltage Regulator</td>
<td>(Q1)</td>
</tr>
<tr>
<td>72-1608C</td>
<td>#6-32 × ½-Inch Cross-Recessed Pan-Head Corrosion-Resistant Steel Machine Screw</td>
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<tr>
<td>72-6606S</td>
<td>#6 × ¾-Inch Pan-Head Thread-Forming Cross-Recessed Type-AB Zinc-Plated-Steel Screw</td>
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<tr>
<td>75-99516</td>
<td>#6-32 Nut/Washer Assembly</td>
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<tr>
<td>75-F80405</td>
<td>#6-32 × ¼-Inch Binder-Head Nylon Screw</td>
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<tr>
<td>78-16008</td>
<td>Thermally Conductive Compound</td>
<td>(Q3)</td>
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<tr>
<td>78-16014</td>
<td>Thermally Conductive Silicon Insulator</td>
<td>(Q2)</td>
</tr>
<tr>
<td>79-58306</td>
<td>6-Position Connector Receptacle</td>
<td>(J6)</td>
</tr>
<tr>
<td>79-58308</td>
<td>9-Position Connector Receptacle</td>
<td>(J7)</td>
</tr>
<tr>
<td>79-58354</td>
<td>4-Position Connector Receptacle</td>
<td>(J8)</td>
</tr>
<tr>
<td>034531-01</td>
<td>Heat Sink</td>
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</tr>
<tr>
<td>100015-103</td>
<td>.01 μF 25V Ceramic-Disc Radial-Lead Capacitor</td>
<td>(C5, C14)</td>
</tr>
<tr>
<td>11000-010</td>
<td>1 Ohm, ± 5%, ¼W Resistor</td>
<td>(R10, 19)</td>
</tr>
<tr>
<td>11000-100</td>
<td>10 Ohm, ± 5%, ¼W Resistor</td>
<td>(R11, 20, 29, 30)</td>
</tr>
<tr>
<td>11000-101</td>
<td>100 Ohm, ± 5%, ¼W Resistor</td>
<td>(R4, 12, 22)</td>
</tr>
<tr>
<td>11000-102</td>
<td>1K Ohm, ± 5%, ¼W Resistor</td>
<td>(R27, 28)</td>
</tr>
<tr>
<td>11000-103</td>
<td>10K Ohm, ± 5%, ¼W Resistor</td>
<td>(R13, 14)</td>
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<tr>
<td>11000-271</td>
<td>270 Ohm, ± 5%, ¼W Resistor</td>
<td>(R1)</td>
</tr>
<tr>
<td>11000-330</td>
<td>33 Ohm, ± 5%, ¼W Resistor</td>
<td>(R3)</td>
</tr>
<tr>
<td>11000-392</td>
<td>3.9K Ohm, ± 5%, ¼W Resistor</td>
<td>(R6)</td>
</tr>
<tr>
<td>11000-562</td>
<td>5.6K Ohm, ± 5%, ¼W Resistor</td>
<td>(R32, 33)</td>
</tr>
<tr>
<td>11000-752</td>
<td>7.5K Ohm, ± 5%, ¼W Resistor</td>
<td>(R7)</td>
</tr>
<tr>
<td>11001-221</td>
<td>220 Ohm, ± 5%, ½W Resistor</td>
<td>(R9, 21)</td>
</tr>
<tr>
<td>11009-027</td>
<td>2.7 Ohm, ± 5%, 1W Resistor</td>
<td>(R5)</td>
</tr>
<tr>
<td>122002-102</td>
<td>.001 μF 25V Ceramic-Disc Minimum Radial-Lead Capacitor</td>
<td>(C2, 7, 16)</td>
</tr>
<tr>
<td>122004-224</td>
<td>.22 μF 25V Ceramic-Disc Capacitor</td>
<td>(C6, 8, 15, 17)</td>
</tr>
<tr>
<td>137151-002</td>
<td>Type-TDA2020A 8W Linear Audio Amplifier</td>
<td>(Q5, 7)</td>
</tr>
<tr>
<td>179051-001</td>
<td>Test Point</td>
<td>Acceptable substitute is part no. 020670-01.</td>
</tr>
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</table>
G. Power Supply Assembly

WARNING
Fuse cover must be in place during game operation.

Figure 3-12  Power Supply Assembly
### Figure 3-12 Power Supply Assembly, continued

#### Parts List

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
<th>(Reference Designations in Bold)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A021084-01</td>
<td>Voltage Plug for 100V (violet)</td>
<td></td>
</tr>
<tr>
<td>A021084-02</td>
<td>Voltage Plug for 120V (yellow)</td>
<td></td>
</tr>
<tr>
<td>A021084-04</td>
<td>Voltage Plug for 220V (blue)</td>
<td></td>
</tr>
<tr>
<td>A021084-05</td>
<td>Voltage Plug for 240V (brown)</td>
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</tr>
<tr>
<td>A034629-01</td>
<td>A.C. Harness Assembly</td>
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</tr>
<tr>
<td>A034630-01</td>
<td>RFI Filter Assembly (FL1)</td>
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<tr>
<td>A035888-01</td>
<td>Upright and Cabinet Transformer Assembly (T1) Acceptable substitute is part no. A035888-02</td>
<td></td>
</tr>
<tr>
<td>A035888-03</td>
<td>Cocktail Shielded Transformer Assembly (T1) Acceptable substitute is part no. A035888-04</td>
<td></td>
</tr>
<tr>
<td>A035890-01</td>
<td>Power Harness Assembly</td>
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<tr>
<td>A035891-01</td>
<td>Fuse Harness Assembly</td>
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</tr>
<tr>
<td>A037671-xx*</td>
<td>Upright and Cabinet Power Supply Assembly</td>
<td></td>
</tr>
<tr>
<td>A037672-xx**</td>
<td>Cocktail Power Supply Assembly</td>
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<tr>
<td>29-053</td>
<td>27,000 μF 15V DC Electrolytic Capacitor (C1)</td>
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<tr>
<td>3A-MDA3501</td>
<td>Bridge Rectifier, Type MDA 3501 (CR1)</td>
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<tr>
<td>46-2014002</td>
<td>4-Amp. 250V 3AG Slow-Blow Glass Cartridge-Type Fuse (F2, F4–F6)</td>
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<tr>
<td>46-2017002</td>
<td>7-Amp. 250V 3AG Slow-Blow Glass Cartridge-Type Fuse (F1)</td>
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<tr>
<td>46-301203</td>
<td>20-Amp. 32V 3AG Slow-Blow Glass Cartridge-Type Fuse (F3)</td>
<td></td>
</tr>
<tr>
<td>76-2708</td>
<td>Nylon Type 6/6 Hole Bushing with 3/8-Inch Inside Diameter x 1/4-Inch Outside Diameter x 1/4-Inch Thick</td>
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</tr>
<tr>
<td>78-70501SC</td>
<td>2-Inch Diameter Capacitor Mounting Bracket</td>
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<tr>
<td>79-15021001</td>
<td>2-Circuit Single-Row Terminal Block</td>
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<tr>
<td>79-3206</td>
<td>5-Position 3AG Fuse Block with 1/4-Inch Quick-Disconnect Terminals</td>
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<tr>
<td>79-4411001</td>
<td>Panel-Mounting Non-Indicating 3AG Cartridge-Type Fuse Post</td>
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<tr>
<td>034482-02</td>
<td>Power Supply Chassis</td>
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<tr>
<td>034544-01</td>
<td>Fuse Block Cover</td>
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<tr>
<td>037243-01</td>
<td>Metal Base Plate (goes under the power supply—not shown in illustration)</td>
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<tr>
<td>037639-01</td>
<td>Label for Fuse Value (F1)</td>
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</tr>
<tr>
<td>037641-01</td>
<td>Label for Fuse Values (F2–F6)</td>
<td></td>
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</tbody>
</table>

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*A037671-01 power supply assembly has the 120V plug
A037671-02 has the 100V, 220V and 240V plugs
A037671-03 has the 220V and 240V plugs

**A037672-01 power supply assembly has the 120V plug
A037672-02 has the 100V, 220V and 240V plugs
A037672-03 has the 220V and 240V plugs

---

**Line Voltage Range** | **Voltage Selection Plug Wire Color**
---|---
90-110 VAC (100) | Violet
105-135 VAC (120) | Yellow***
200-240 VAC (220) | Blue
220-260 VAC (240) | Brown

***This is the only plug provided on the North American power supply.
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(b) Such products are returned prepaid to Sellers’ plant; and

(c) Seller’s examination of said products discloses to Seller’s satisfaction that such alleged defects existed and were not caused by accident, misuse, neglect, alteration, improper repair, installation or improper testing.

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