TM-394
1st printing

T-MEK™

Operator's Manual

ATARI GAMES

TIME WARNER INTERACTIVE

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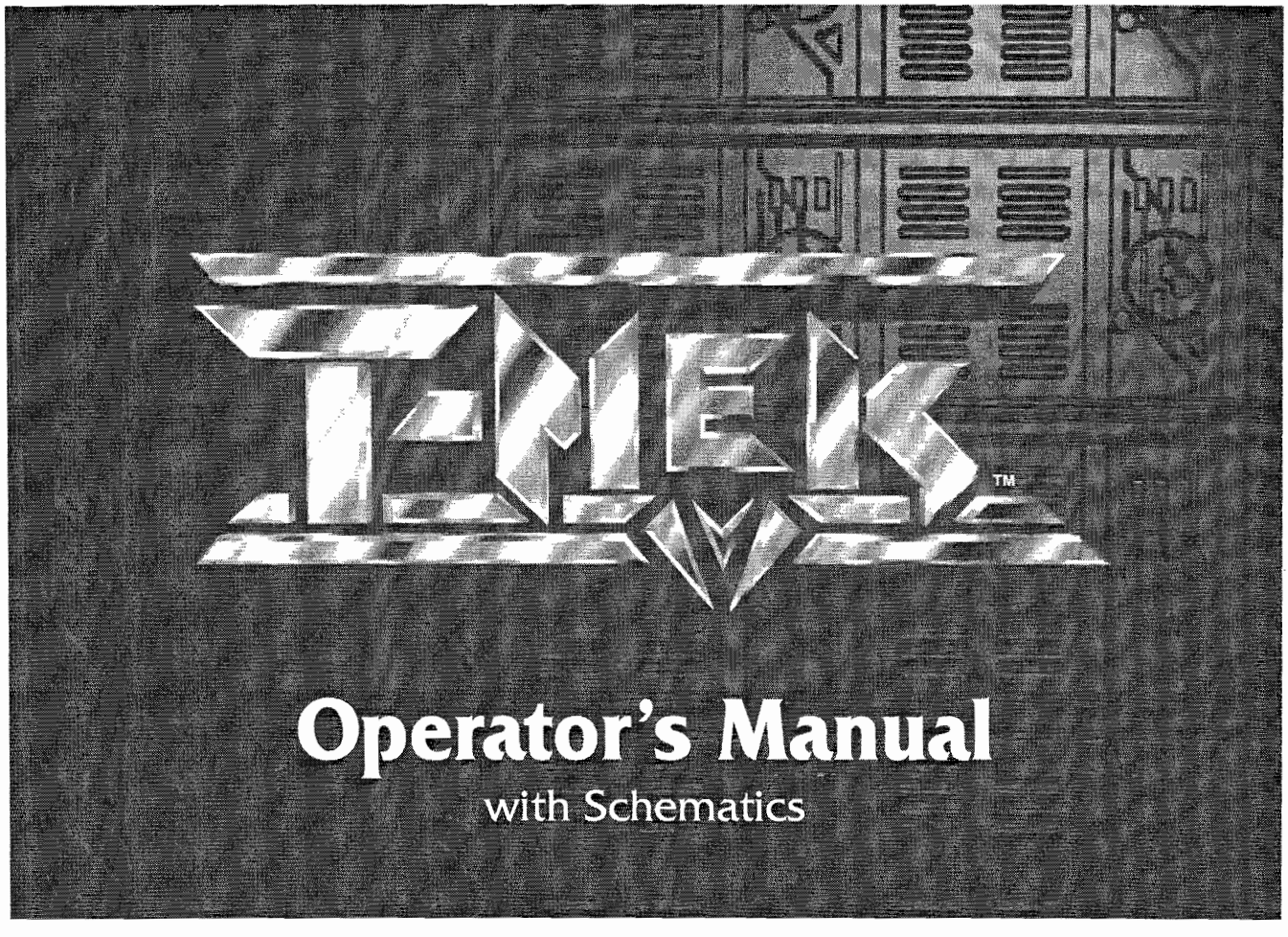

Operator's Manual

with Schematics

Patents are pending on several parts of the T-MEK game.

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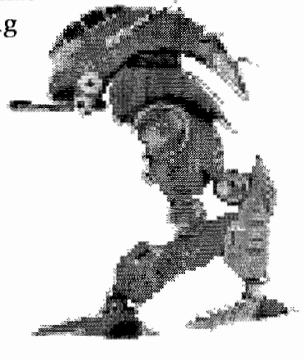

NOTICE RE NON-ATARI® PARTS

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Use of non-Atari parts or modifications of any Atari game circuitry may adversely affect the safety of your game, and may cause injury to you and your players.

You may void the game warranty (printed on the inside back cover of this manual) if you do any of the following:

- Substitute non-Atari parts in the game.
- Modify or alter any circuits in the game by using kits or parts *not* supplied by Atari Games Corporation.

FCC COMPLIANCE

This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart J of Part 15 of Federal Communications Commission (FCC) Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area or modification to this equipment is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference. If you suspect interference from an Atari game at your location, check the following:

- All ground wires in the game are properly connected as shown in the game wiring diagram.
- The power cord is properly plugged into a grounded three-wire outlet.
- On games provided with an Electromagnetic Interference (EMI) ground plane, be sure that the game printed-circuit boards (PCBs) are properly installed on the EMI ground plane and that the end board is securely installed with **all** screws in place and tightened.

If you are still unable to solve the interference problem, please contact Customer Service at Atari Games Corporation. See the inside front cover of this manual for service in your area.

Safety Summary

The following safety precautions apply to all game operators and service personnel. Specific warnings and cautions will be found in this manual whenever they apply.

WARNING

Properly Ground the Game. Players may receive an electrical shock if this game is not properly grounded! To avoid electrical shock, do not plug in the game until it has been inspected and properly grounded. This game should only be plugged into a grounded three-wire outlet. If you have only a two-wire outlet, we recommend you hire a licensed electrician to install a three-wire grounded outlet.

AC Power Connection. Before you plug in the game, be sure that the game's power supply can accept the AC line voltage in your location. The line voltage requirements are listed in the first chapter of this manual.

Disconnect Power During Repairs. To avoid electrical shock, disconnect the game from the AC power before removing or repairing any part of the game. If you remove or repair the video display, be very careful to avoid electrical shock. High voltages continue to exist even after power is disconnected in the display circuitry and the cathode-ray tubes (CRTs). Do not touch the internal parts of the display with your hands or with metal objects! Always discharge the high voltage from the CRTs before servicing them. Do this after you disconnect them from the power source. First, attach one end of a large, well-insulated, 18-gauge jumper wire to ground. Then momentarily touch the free end of the grounded jumper wire to the CRT anode by sliding the wire under the anode cap. Wait two minutes and do this again.

Use Only Atari Parts. To maintain the safety of your Atari game, use only Atari parts when you repair it. Using non-Atari parts or modifying the game circuitry may be dangerous, and could injure you and your players.

Handle the CRTs With Care. If you drop a CRT and it breaks, it may implode! Shattered glass from the implosion can fly six feet or more.

Use the Proper Fuses. To avoid electrical shock, use replacement fuses which are specified in the parts list for this game. Replacement fuses must match those replaced in fuse type, voltage rating, and current rating. In addition, the fuse cover must be in place during game operation.

CAUTION

Properly Attach All Connectors. Make sure that the connectors on each printed circuit board (PCB) are properly plugged in. The connectors are keyed to fit only one way. If they do not slip on easily, do not force them. If you reverse a connector, it may damage your game and void your warranty.

Ensure the Proper AC Line Frequency. Video games manufactured for operation on 60 Hz line power (used in the United States) must not be operated in countries with 50 Hz line power (used in Europe). If a 60 Hz machine operates on 50 Hz line power, the fluorescent line ballast transformer will overheat and cause a potential fire hazard. Check the product identification label on your machine for the line frequency required.

ABOUT NOTES, CAUTIONS, AND WARNINGS

In Atari publications, notes, cautions and warnings have the following meaning:

NOTE — A highlighted piece of information.

CAUTION — Equipment and/or parts can be damaged or destroyed if instructions are not followed. You will void the warranty on Atari printed-circuit boards, parts thereon, and video displays if equipment or parts are damaged or destroyed due to failure of following instructions.

WARNING — Players and/or technicians can be killed or injured if instructions are not followed.

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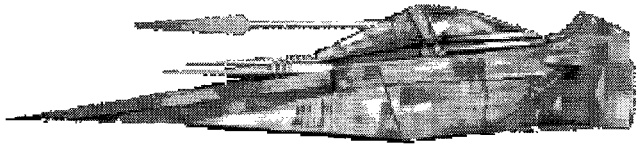

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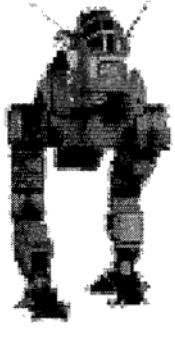


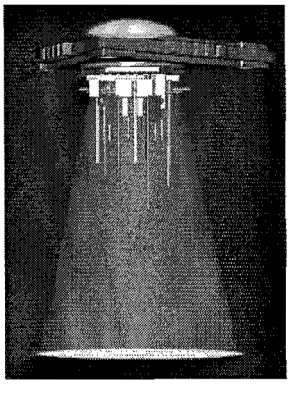
CHAPTER 1

Set-Up

How to Use This Manual

THIS MANUAL IS written for operators and service personnel. It provides information for setting up, playing, testing, and maintaining your T-MEK™ game.

T-MEK is a one- or two-player futuristic arena battle game that allows players full navigational control. To maximize earnings, you can link two or three cabinets together so that as many as six players can compete in arena battles. To do so, a separate tournament play link kit is available from your authorized Atari distributor.



Chapter 1 of this manual contains set-up and game play information. ♦ Chapter 2 contains a description of the self-test procedures and option settings. The self-test is important in the T-MEK game. You can troubleshoot the printed-circuit boards (PCBs), main circuits, and controls using the screens in the self-test. You should regularly test the boards and controls with the self-test to keep your game in peak condition and at top earnings.

Chapter 3 contains several troubleshooting tables, plus maintenance and repair procedures for the game components. If you have problems with your game, use this chapter to troubleshoot and repair it. Be sure to perform the preventive maintenance tasks to keep your game in good condition. ♦ Chapter 4 contains the illustrations and PCB parts lists. ♦ Chapter 5 contains the schematics for all the PCBs and all the wiring diagrams.

Operating the Game

To operate your game for maximum income, you should regularly run the self-test and check the controls with the Control Test and Sound Test in the self-test. By using the self-test regularly, you can find and fix problems immediately. This lets you keep your game in top condition.

Inspecting the Game

WARNING

To avoid electrical shock, do not plug in the cabinet until it has been properly inspected and set up for the line voltage in your area.

This cabinet should be connected to a grounded three-wire outlet only. If you have only two-wire outlets, we recommend that you hire a licensed electrician to install grounded outlets. Players can receive an electrical shock if the cabinet is not properly grounded.

Make note of the power consumption when you set up this game, so that you do not overload your electrical circuit. See Table 1-1 for the power consumption and the other important specifications of this game.

Inspect your T-MEK game carefully to ensure that the game is complete and was delivered to you in good condition. Inspect the cabinet and seat as follows:

1. Examine the exterior of the cabinet for dents, chips, or broken parts.
2. Open the lower rear access panels. Unlock and open the coin doors. Inspect the interior of the cabinet as follows:
   a. Check that all plug-in connectors on the cabinet harnesses are firmly plugged in. Do not force connectors together. The connectors are keyed so they fit only in the proper orientation. A reversed connector can damage a printed-circuit board (PCB). This will void your warranty.
   b. Ensure that all plug-in integrated circuits on each PCB are firmly plugged into their sockets.
   c. Inspect the power cord for any cuts or dents in the insulation.
   d. Inspect the power supply. Make sure that the correct fuses are installed. Check that the harness is plugged in correctly. Check that the green ground wires are connected.

Characteristic	Specification
Input Current	4 Amps at 120 V
Line Fuse Rating	6.25 Amps at 120 V, slow blow
Line Voltage	102 to 132 VAC
Temperature	5° to 38° C (37° to 100° F)
Humidity	Not to exceed 95% relative
Width	53 inches (134.6 cm)
Depth	34.5 inches (87.6 cm)
Height*	74 inches (188 cm)
Weight	580 lbs. (263 kg)

**Including the wood attraction-sign housing*

Table 1-1 Game Specifications

   e. Inspect other sub-assemblies, such as the video displays, controls, printed-circuit boards, and speakers. Make sure that they are mounted securely and that the ground wires are connected.

Control and Switch Locations

All of the controls are located on the back of the cabinet or behind the coin doors (see Figure 1-1). The following describes the locations in more detail:

Power On/Off Switch

The power on/off switch is located on the bottom of the monitor cabinet rear panel.

Volume Control

There is no volume adjustment knob on any PCB in this game. Instead, volume is separately adjusted in the self-test for each side. The attract-mode and game-play volumes can be adjusted separately. Refer to Chapter 2 of this manual for more information.

Self-Test Switch

There is one self-test switch, mounted on a bracket behind the coin door. This self-test switch controls both screens.

Although there is an additional self-test switch located on each GT (game) PCB, for convenience we recommend that you use the coin door self-test switch.

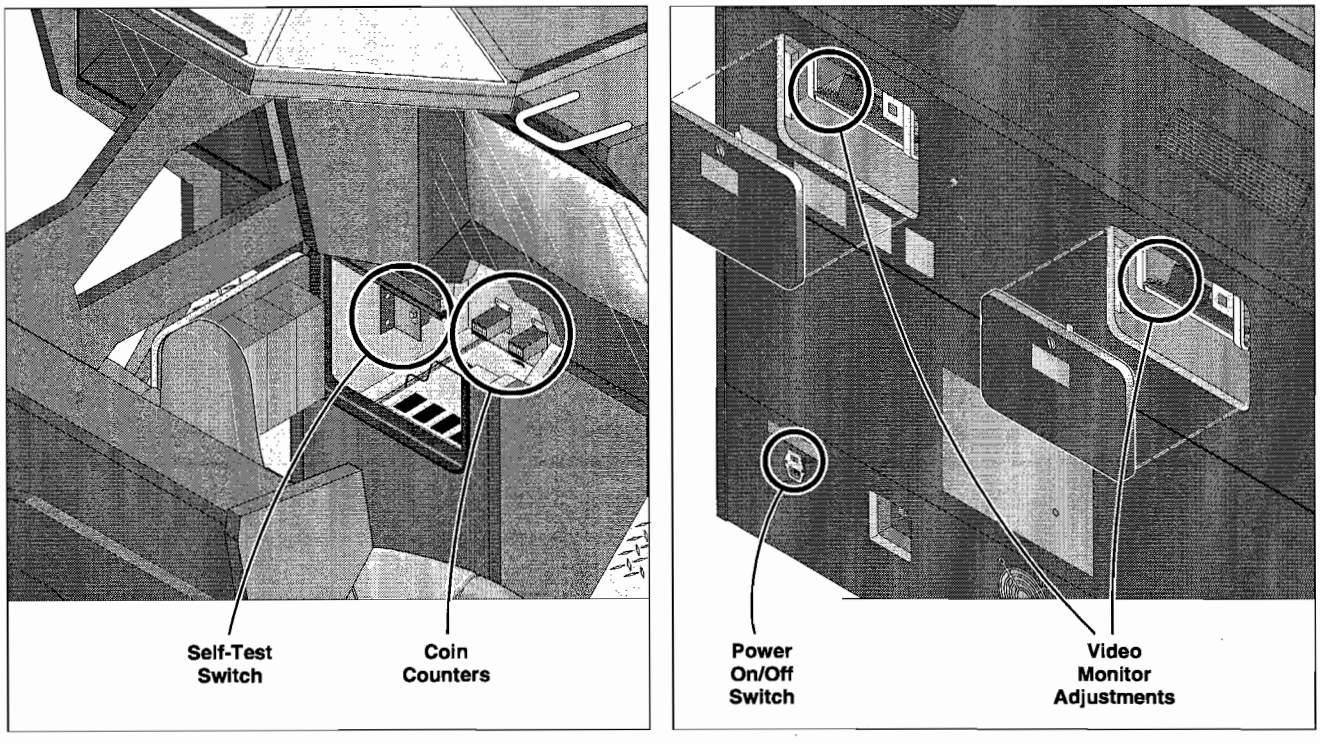


Figure 1-1 Main Control and Switch Locations

Coin Counters

The two coin counters are located above the coin box, inside the coin door.

Video Display Controls

This game provides convenient access to six of the most important video display controls — vertical and horizontal position, vertical hold, vertical size, black level, and contrast. These control knobs are on small PCBs that are mounted on the plywood panel inside each coin door (see Figure 1-1).

Installing the Attraction Assembly

WARNING

The attraction assembly weighs about 45 lbs. To prevent injuries, we recommend you have another person help you lift the assembly onto the top of the game cabinet.

1. Unwrap the protective covering on attraction assembly.
2. Reach into the small slit near the center of the top surface of the game cabinet. Tie-wrapped inside this opening is the attraction light harness. Pull out the harness.
3. Make sure the mate to this harness (inside the attraction assembly) protrudes from the assembly. If the connector is inside the attraction assembly, you will have to remove the six black screws that secure the attraction shield. Then shove the fluorescent light connector through the slit in the attraction assembly.
4. With a helper, hold the attraction assembly slightly above the top of the game cabinet. Plug the fluorescent light harness connectors together. Then carefully lower the attraction assembly onto the top of the game, *making sure you do not pinch any wires.*
5. Insert the four tamperproof screws and flat washers into the holes provided in the open rear area behind the attraction light.

Joining the Two Cabinet Halves Together

Make sure the game power is turned off. To join the separately packaged seat assembly to the cabinet, you need a hex driver or wrench. Follow these steps to attach the seat assembly onto the game:

1. Using the wood screws provided, attach the divider panel to the center of the seat assembly (through the black L-brackets). See Figure 4-1.
2. Reach in through the rectangular front openings at the bottom center of the game. Pull out both sets of harnesses.
3. Move the seat assembly near to the front of the game cabinet. Plug the harnesses into the corresponding jacks on the seat assembly.
4. Slightly raise the unattached end of the divider panel as you move the seat assembly up flush to the game, being careful not to pinch any excess harness wires. Adjust the glides to match the seat platform height with the cabinet height.
5. Loosely place one seat/cabinet brace on each side of the cabinet — they are mirror images of each other. Install four flat washers and tamperproof screws into the four holes provided on each side. As you tighten the screws, press each bracket firmly against the sides of the seat assembly and cabinet.

Setting the Coin and Game Options

The T-MEK coin and game options are set in the self-test. Refer to Chapter 2 for the recommended settings and the procedure for setting the options.

Installing the Optional Cabinet Link Kit

An optional T-MEK link kit is available from your distributor for a nominal fee. This kit includes a wood sign with graphics, support rods, brackets, a link cable, and other hardware. The cabinet has predrilled holes for the support rods.

This kit was designed to be installed in your choice of three cabinet positions, to allow flexibility in fitting two linked T-MEK cabinets into your location. For installation instructions on this link kit, refer to the supplement CO-394-01, which is included with the kit.

Game Play

This section describes the features and play of the T-MEK game.

Introduction

Take the T-MEK Tournament Challenge! T-MEK is a vehicular combative fighting simulator that provides an insanely interactive, in your face, fight for survival or supremacy. The ultimate objective is to become champion of the T-MEK Tournament. This is no easy task, for it ultimately requires defeating Nazrac the Eliminator, the supreme T-MEK Warrior and sponsor of the tournament.

The tournament consists of a series of dark and challenging arena battles. Each battle pits four T-MEK Warriors in head-to-head competition. In addition to fighting other T-MEK Warriors, players also have to contend with deadly alien drones and arena bosses. The arenas also have hidden special weapons.

CAGE
Total Immersion Audio

T-MEK is a deluxe sit-down with custom analog controls and Atari's new CAGE audio system. Each two-player game cabinet can link two players in head-to-head play as well as permit solo play for lone players. Up to three cabinets can be linked for six-way head-to-head action.

Game Play

The game offers two playing modes:

- Solo — A tournament ladder climb. Players must finish first in each arena battle in order to progress up all 12 rungs of the tournament ladder. All rungs have arena opponents, while six have boss characters that must be pummeled to death.
- Head-to-Head — A competitive rank challenge. All join-in players force a head-to-head situation with the incumbent player. While in this mode, progression up the ladder is suspended until a player opts

not to reenter the fray. The remaining player continues the ladder climb.

The T-MEK Tournament

The object of T-MEK is to prove one's superiority against all challengers, rising through Nazrac's tournament ladder until one meets the supreme T-MEK Warrior — Nazrac, The Eliminator.

In a T-MEK match, the player enters one of six exotic arenas with three other T-MEK warriors. Points are scored by hitting and destroying other MEKs with the blasters, plasma cannons, and specialized weapons available to the player. When a player's MEK is ravaged and explodes, the pilot automatically ejects, grabs a backup MEK, and jumps back into battle. When the match time runs out and the twisted wreckage slides to a stop, Nazrac declares the player with the most points the winner. The battle's winner continues in the tournament for free; the losers must pay a re-entry fee to continue in the competition.

If you defeat a higher ranking player, you acquire that player's rank in the tournament. As you progress up the ladder you are pitted against the boss of each arena who are special underlings to Nazrac. Unlike other rung battles, these fights are to the death! If you defeat the arena boss, you replace him, her, or IT as the ruler of that arena and the planet it lies on.

MEKs

Before each match, the player must choose a MEK to take into battle. Each MEK has distinctive speed, shield, and weapon characteristics as well as completely unique special weapons and defenses. The player has six MEKs to choose from: SpeedMEK, StealthMEK, AssaultMEK, HyperMEK, LurkerMEK, and SuicideMEK.

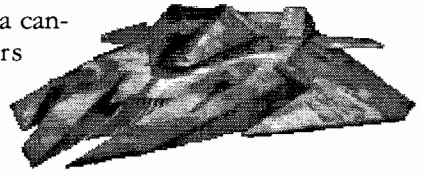
Arenas

There are six fantastic arenas, each with unique graphics and dimensions of game play: blistering Sun's Anvil, electrifying Storm Rift, hellish Inferno, maze-like Stone Web, claustrophobic Alien Nest, and Nazrac's Killing Floor! While in head-to-head mode, arena selection is reserved for the battle winners.

Controls, Weapons and Defenses

The two control sticks move the MEK through the arena. Since MEKs hover above the ground, they may slide left and right as well as forward and back. By pushing one stick forward or back, the MEK travels in a curve. By pushing one stick forward and one stick back, it spins in place. Pushing the stick a small distance causes a small acceleration, while a harder push moves it faster.

The right trigger fires long-range plasma cannons. The glowing hot plasma does heavy damage to MEKs and arena structures. Plasma shots automatically curve to track the player registered in the lock-on cursor. The left trigger fires two short-range blasters. Blasters fire rapidly, but do not travel far before gouging into the ground. An individual blaster hit does light damage, but their cumulative effect is deadly. Both plasma cannons and blasters may be fired with no limitation.



Each MEK has a different set of special weapons that are fired by the right thumb button. To fire a special weapon, you must have at least one offense power-up (shown on the right side of the control panel). To get more offense power-ups, the player must go through the blue light beaming down from underneath the floating reload platforms.

Holding down the left thumb button activates the MEK's defensive system. The defense varies from MEK to MEK, but all have the same basic effect, making the MEK impervious to weapons. The defensive charge is measured on the left side of the control panel. When this charge runs out, the defense will no longer work. When the defense is not active, the charge slowly builds up. As an added benefit, while the defense is active the MEK can turn faster than usual. However, as long as the defense is active, conventional weapons will not work.

MEK Targeting Systems

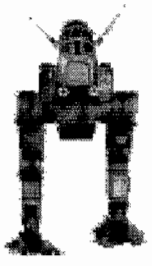
Each MEK has several systems to help track and target opponents. Player's are color-coded. The right-hand screen in the control panel shows who is in the lead. The color of that player's name matches the color of the radar dot showing the position of that lead player's MEK, which also matches the color of the glow of that player's engines on-screen.

When another MEK is in the targeting sights, the weapon systems automatically lock on to that competitor — a secondary target bracket follows that MEK. When locked on, information about that MEK appears near the central target sight: the opponent's name written in that player's color, and the point value for that player. The darker the color of the opponent's name, the less shield power that MEK has. The plasma cannon and some special weapons will automatically home in on whoever the system is locked onto.

Control Panel

The small screen in the right part of the control panel shows the current rankings of all players in the match, sorted by the points they have earned. The small screen in the left part of the control panel shows the player's current score and the time remaining in the match.

The radar is in the center of the control panel and is a top-down view with the player at the center. The large colored dots represent the color-coded opponents. Dots at the top of the circle represent MEKs in front of you; dots in the right part of the circle are MEKs to your right, and so on. The moment-to-moment relative position of these dots is not fully accurate and may jump around since opponents' MEKs resist detection. MEKs with high defense ratings are more difficult to track on your radar. The LurkerMEK is nearly impossible to pin down.



Shields

The bar at the top of the screen represents the remaining shield power. If the shields are gone and your MEK suffers additional damage, your MEK explodes. You lose precious seconds and points before you re-enter the battle in a new MEK — and in fights to the death against arena bosses, lose your last hope of survival!

Scoring Tips

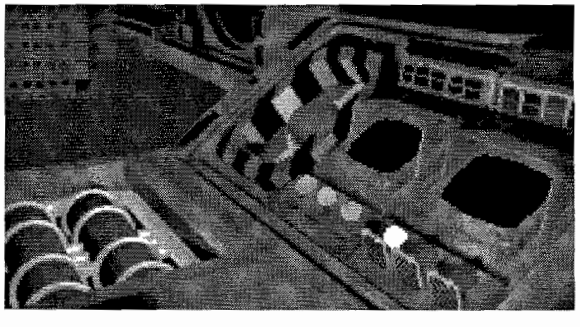
When locked onto a MEK, under the name of the MEK's pilot, a "kill bonus" — how many points you would get for destroying that MEK, is displayed. A "confirmed kill" report appears when you get this bonus. In addition, when you damage a MEK you get a fraction of that kill bonus, proportional to the amount of damage you did. If an opponent's kill bonus is 40,000, for example, you get 10% of that, or 4,000 points, for hitting that MEK with your plasma cannon. A MEK's kill bonus is not always the same. In fact, the kill bonus for a player depends on that player's current ranking. A player who at the moment is in first place has a kill bonus of 80,000 points. A player who is currently in last place has a kill bonus of merely 20,000 points. Therefore, to maximize points, go after the higher-ranked players! When your MEK is destroyed, Nazrac deducts a fraction of your points.

CHAPTER 2

Self-Test

Introduction

USE THE T-MEK™ self-test to check the condition of the game circuitry and controls. You will see the self-test information on the video display and hear the sound test information through the speakers. You do not need any additional equipment to perform the self-test. Perform the self-test when you first set up the game, each time you collect the money, or when you suspect game problems. This chapter shows the screens in the self-test and explains each of the tests. The screens and explanations are arranged in the order they appear in the self-test. Table 2-1 lists all the self-test screens.



Entering and Exiting the Self-Test

The game's self-test switch is located behind the coin door. Turning it on causes both screens to enter the self-test mode. Doing so displays the Select Test menu; see Figure 2-1. Exit the self-test by turning off the self-test switch at any time. Once in the self-test mode, both video displays act independently: each is controlled by its own joystick controls.

Select Test Menu
Adjust Volume
Statistics Statistics Histograms Session Length (in games) Highest Tournament Level (Solo) AI Rank in Linked Games Clear All Histograms
Game Options
Coin Options
Tournament Options
Controls Test
Sound Test Audio Checksums Speaker Test
RAM (Memory) Tests Video RAM Video RAM (quick) Color RAM Translucency RAM Mixing RAM, Low Mixing RAM, High Working RAM Working RAM (quick) All RAM
ROM Test
Video Tests Playfield Scrolling MOB (Moving Objects) Checksums MOB Test Alphanumerics
Monitor Tests Color Test Purity Test Convergence Test
Link Test

Table 2-1 Summary of All Self-Test Screens

At the bottom of the self-test screens you may find that the MOS or OS versions shown in this manual are different from your game. Any version differences in the software are unimportant.

Select Test Menu

Choose which test or screen you want to see from this menu, shown in Figure 2-1. Both video displays show the same full self-test, because each player station has a full set of electronic hardware.

Move up and down the menu by moving the right joystick forward or backward (or by pressing the thumb button). Start the selected test by pressing the trigger button.

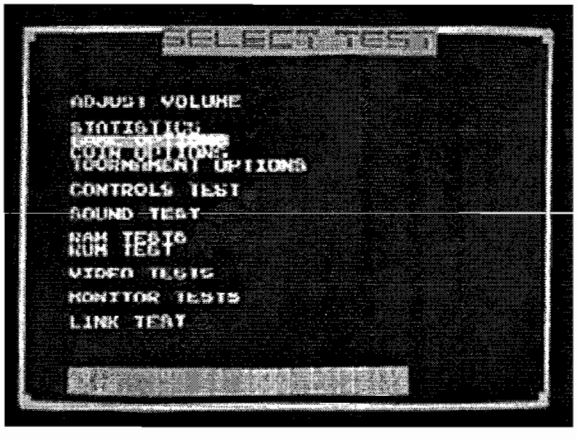


Figure 2-1 Select Test Menu Screen

Adjust Volume

Adjust the volume of the game using this screen, shown in Figure 2-2. Follow the instructions at the bottom of the screen to change the volume, to restore the old volume level, and to save the new volume and return to the select test menu.

The software continuously plays music to allow you to adjust both the game and attract-mode volume levels. The word *GAME* or *ATTRACT* flashes to show which of the two volumes levels you are adjusting. Move the joystick up or down to select either one. The attract-mode volume level has four steps: mute, 1/3, 2/3 or full volume level (these are fractions of the game volume level).

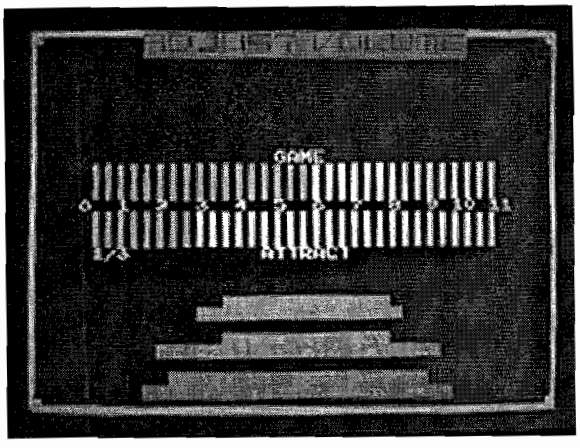


Figure 2-2 Adjust Volume Screen

Statistics

Use the information shown in the statistics and histogram (bar graph) screens to keep track of your game use and maximize your profits.

The game statistics are collected from the last time the statistics were cleared. Follow the instructions at the bottom of the screen to clear the statistics or to advance to the next statistics or histogram screen.

Statistics Screen

The statistics screen (see Figure 2-3) lists the following information:

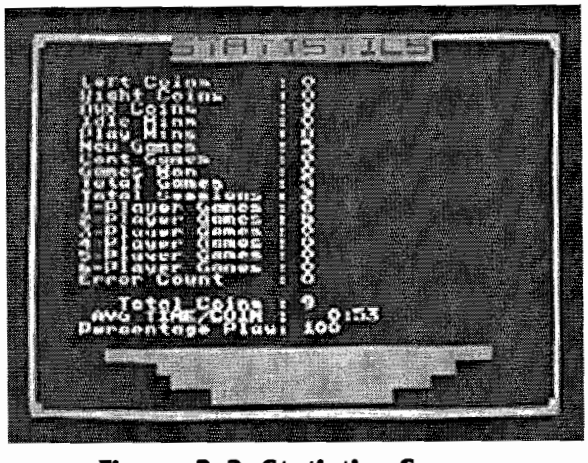


Figure 2-3 Statistics Screen

- Left Coins shows the number of coins counted in the left coin mechanism.
- Right Coins shows the number of coins counted in the right coin mechanism.
- Aux Coins shows the number of coins manually added by the operator. (not inserted into any mechanism).
- Idle Minutes shows the number of minutes that the game was idle and not being played.
- Play Minutes shows the number of minutes that the game was being played.
- New Games shows the number of unique games played. A unique game is counted every time a player starts a new game (not a continued game).
- Continued Games shows the number of games that players continued.
- Games Won shows the number of waves in which the player has ranked in first place.
- Total Games shows total waves completed.
- Total Sessions shows total games completed.
- 1-Player Minutes/2-Player Minutes shows the number of minutes that the game was played by one or two players.
- 3-Player Minutes through 6-Player Minutes shows the number of minutes that the game was played by that many players (valid only if two or three cabinets are linked together).
- Error Count shows the number of errors counted in the erasable memory. If you have an error count, the statistics may be wrong. If you consistently have errors counted for several weeks, replace the EEROM at 22H on the T-MEK game PCB.

Histogram Screens

The histograms screen is a menu that lets you display one of three screens (see Figure 2-4). These show various horizontal bar graphs for session length, highest tournament level, and AI (artificial intelligence) rank in linked games.

Figure 2-4 Histograms Menu

Option	Available Settings		Explanation
Clear High Score Table Now	Yes	No ✔	Clears the high score table the next time you select the game mode.
Auto-Clear High Scores	Yes ✔	No	Automatically clears the high score table periodically.
Station ID	Red (Left) A Blue (Right) B Yellow (Left) C Purple (Right) D Green (Left) E Orange (Right) F		Set each screen to a different color, as shown in Figure 2-6.
Game Time (in Seconds)	60, 70, 80 ✔, 90, 100, 110, 120, Infinite		Determines how much time is granted whenever a game is started.
Difficulty Setting	Easiest ... Medium ✔ ... Hardest		Provides a choice of five levels of game difficulty.

✔ *Manufacturer's recommended settings*

Table 2-2 Game Option Settings

Game Options

Check and select the game options on this screen, shown in Figure 2-5. The screen shows the factory default settings in green.

To move through the options, to change or save the settings, or to return to the select test menu, follow the instructions shown at the bottom of the screen. The game options, with defaults, are shown and explained in Table 2-2.

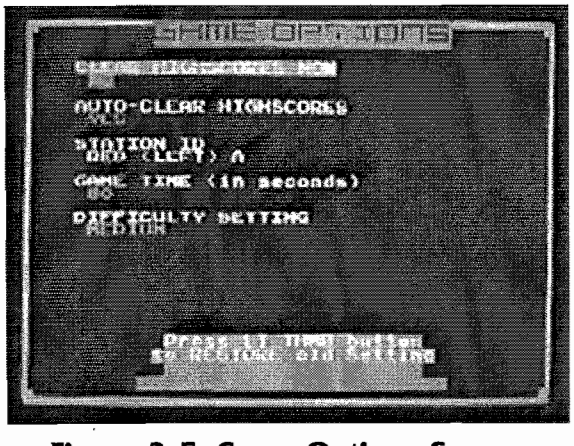


Figure 2-5 Game Options Screen

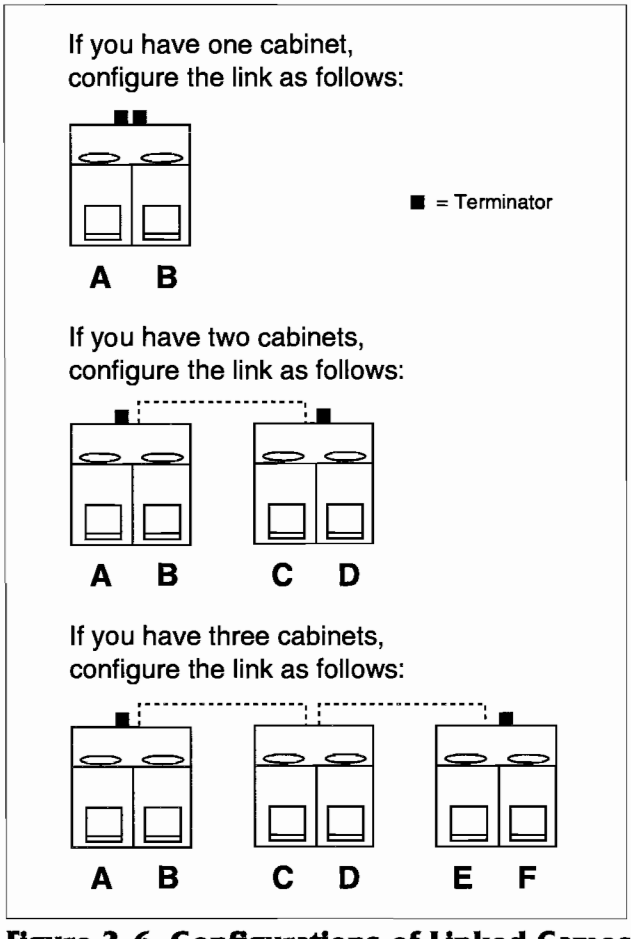


Figure 2-6 Configurations of Linked Games

Coin Options

Check and select the coin options on this screen, shown in Figure 2-7. The screen shows the factory default settings in green.

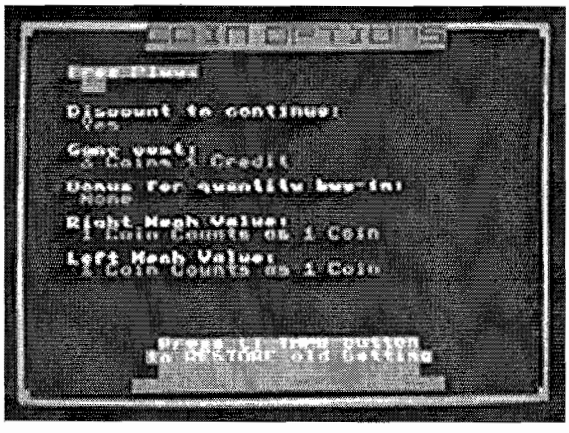


Figure 2-7 Coin Options Screen

To move through the options, to change or save the settings, or to return to the select test menu, follow the instructions shown at the bottom of the screen. The coin option settings, with defaults, are shown and explained in Table 2-3.

Tournament Options

Check and select the tournament options on this screen, shown in Figure 2-8. The screen shows the factory default settings in green.

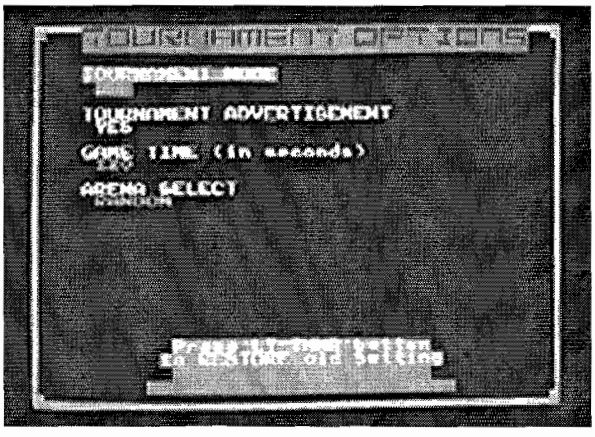


Figure 2-8 Tournament Options Screen

Option	Available Settings	Explanation
Free Play	No ✔ Yes	Lets you choose free play to demonstrate the game.
Discount to Continue	No Yes ✔	When set to *Yes*, this option reduces by 50% the player's cost to continue a game (always rounded up to the next full coin).
Game Cost	1 coin 1 credit 2 coins 1 credit ✔ ... 8 coins 1 credit	The number of coins required for one credit.
Bonus for Quantity Buy-in	None ✔ 2 coins give 1 3 coins give 1 3 coins give 2 4 coins give 1 ... 9 coins give 2 9 coins give 3	Lets you choose from various kinds of bonuses or no bonus.
Right Mech Value	1 coin counts as 1 coin ✔ 1 coin counts as 2 coins ... 1 coin counts as 7 coins 1 coin counts as 8 coins	The number of coins each coin counts as in the right coin mechanism.
Left Mech Value	1 coin counts as 1 coin ✔ 1 coin counts as 2 coins ... 1 coin counts as 7 coins 1 coin counts as 8 coins	The number of coins each coin counts as in the left coin mechanism.

✔ *Manufacturer's recommended settings*

Table 2-3 Coin Option Settings

Note that on this menu, if you have set the tournament mode to ON, this menu's game time *overrides* the setting on the Game Options menu game time.

NOTE

For normal everyday game play, be sure to keep the tournament mode in the OFF position.

To move through the options, to change or save the settings, or to return to the select test menu, follow the instructions shown at the bottom of the screen.

Controls Test

The controls test screen is shown in Figure 2-9. This test checks all the pushbutton switches, the joystick potentiometers, and the cabinet light above the monitor.

As you use each control, the numbers for the joystick pots increase or decrease, or the red Xs for switches become 0s. If the changes do not appear on the screen, check the controls and their wiring.

To reset the joystick pot limits, to change or save the settings, or to return to the select test menu, follow the instructions shown at the bottom of the screen.

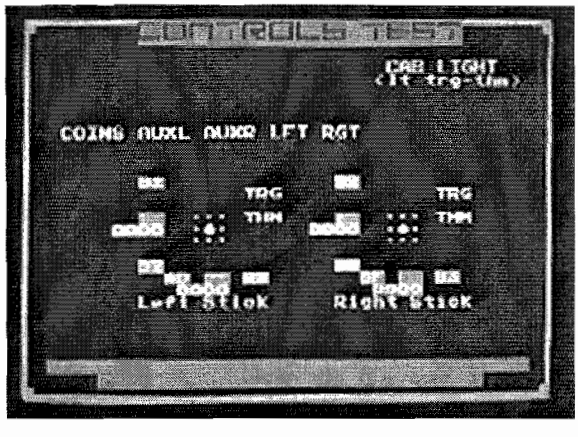


Figure 2-9 Controls Test Screen

Press and *hold* the right thumb button to exit from the controls test.

Sound Tests

Use this selection screen, shown in Figure 2-10, to determine the condition of the sound effects circuit on the game PCB.

NOTE

The audio boards must be installed and connected in the game to perform this test.

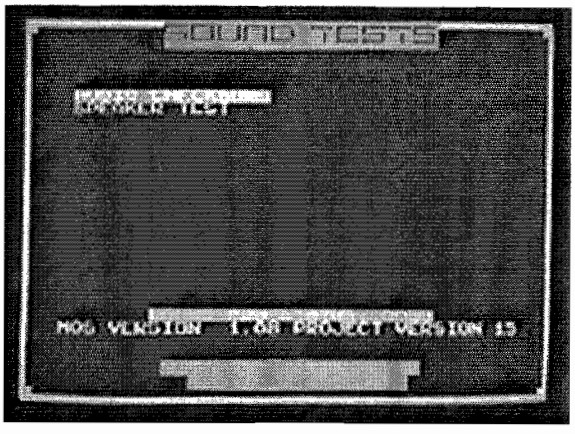


Figure 2-10 Sound Tests Screen

To check the audio ROMs, run the Audio Checksums test. To determine if all five speakers are working properly, select the Speaker Test.

In the Audio Checksums test, verify that all the checksums are displayed in white. If any of them show red numbers, you have a problem with the circuitry or ROMs. If all ROMs are bad, suspect the circuitry. If a single checksum is bad, check for improper ROM seating.

In the Speaker Test (see Figure 2-11), move the right joystick to all four diagonal corners. After doing so, at each corner you should hear a voice coming from the corresponding speaker, saying "Left Front" or "Right Rear", for example.

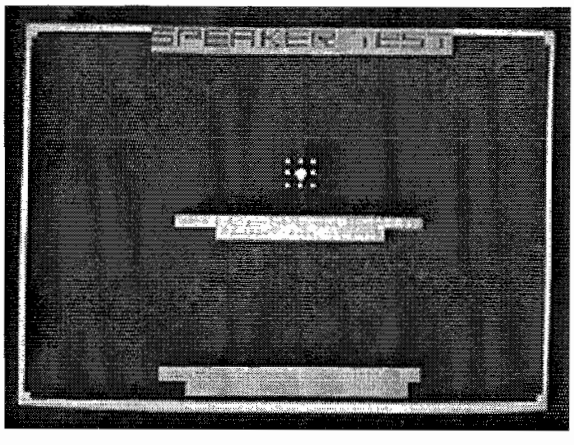


Figure 2-11 Speaker Test Screen

RAM (Memory) Tests

Use this selection screen, shown in Figure 2-12, to run any of the nine RAM tests. These tests check the RAM chips in various ways.

When you turn on the power, the game automatically runs through the random-access memory (RAM) tests. Refer to Chapter 3 of this manual for more details.

Figure 2-12 Memory Tests Screen

ROM Test

This screen displays any ROM errors by showing a non-zero number after a particular item. A properly working board should cause your screen to display only 0s in the right column.

If a ROM fails, a message may be displayed. However, depending on how bad the ROM error is, you may not be able to enter the self-test.

If you have a ROM error, check the four ROMs labeled PGM_LL, PGM_LM, PGM_UM, and PGM_UU at 24L through 29L on the T-MEK game PCB. Check these locations for bent pins or incorrectly inserted chips. Also see Table 3-2 for information about the locations of the ROMs and their functions.

Video Tests

Use this selection screen, shown in Figure 2-13, to determine the condition of the video circuitry on the game PCB.

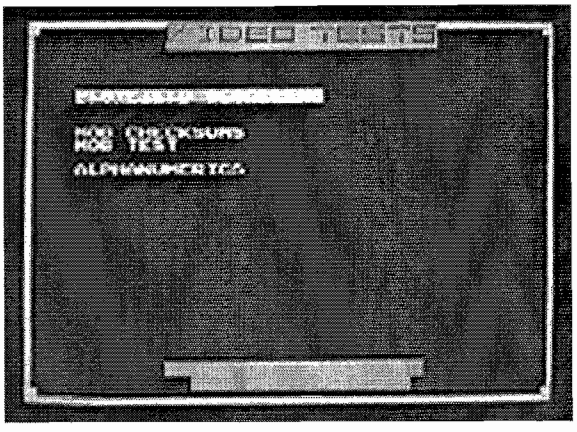


Figure 2-13 Video Test Selection Screen

Playfield Scrolling

The playfield scrolling test is shown in Figure 2-14. To scroll the playfield continuously in a horizontal or vertical direction, move the joystick in the corresponding direction. Make sure that the playfield screen is clean and scrolls smoothly across the screen.

If the screen image does not move, or appears different from Figure 2-14, you have a problem in the playfield circuitry at locations 25N–28N on the T-MEK game PCB. To return to the select test menu, follow the instructions shown at the bottom of the screen.

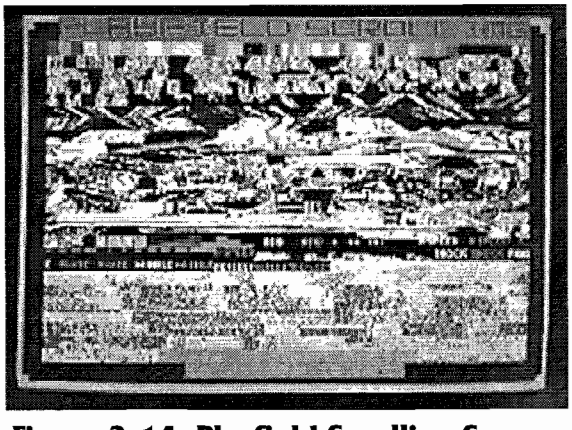


Figure 2-14 Playfield Scrolling Screen

MOB (Moving Objects) Checksums

The first MOB test screen, shown in Figure 2-15, examines the checksums of the MOB ROMs. If the checksums match, you should see the white numbers displayed as shown in Figure 2-15.

The eight designations listed in the left column on the screen (MOH0/MOL0 through 8) are the labels on the chips. If the checksums do not match, either you have a defective EPROM/ROM or a chip may be installed incorrectly.

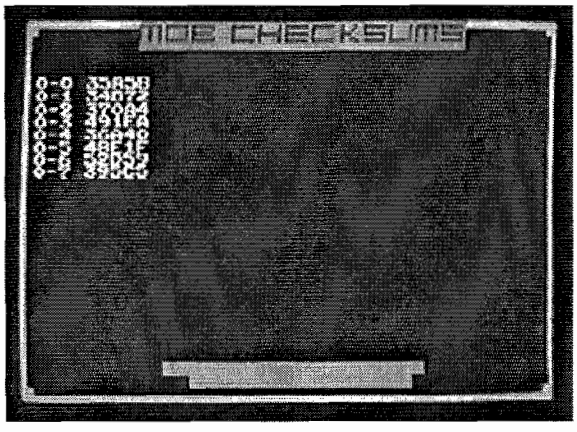


Figure 2-15 MOB Checksums Screen

MOB (Moving Objects) Test

The second MOB test screen (see Figure 2-16) shows a single MOB. Use the left joystick to grow/shrink the square. Make sure the growth is smooth; any tearing of lines or pixels and/or inconsistent colors indicate a problem with the MOB circuitry.

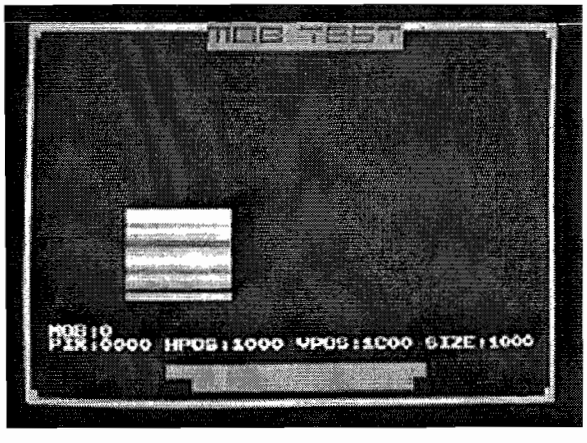


Figure 2-16 MOB Test Screen

Alphanumerics

The alphanumerics test is shown in Figure 2-17. To page (scroll) the screen up/down or right/left, move the joystick accordingly. If the screen image does not move, or appears different from this figure, you have a problem in the alphanumeric circuitry at location 22P/R on the T-MEK game PCB. To return to the select test menu, follow the instructions shown at the bottom of the screen.

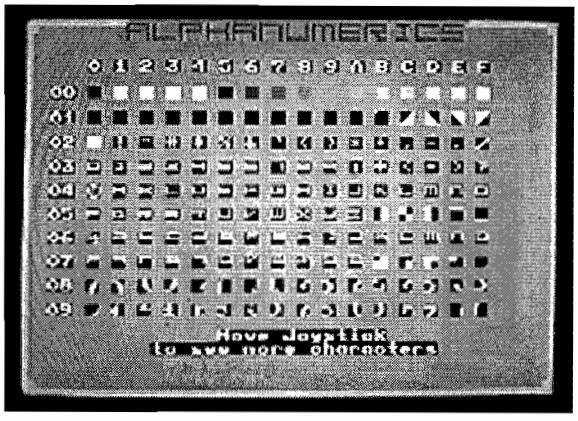


Figure 2-17 Alphanumerics Test Screen

Monitor Tests

The monitor test selection screen lets you select from three screens — color, purity, and convergence. Advance to each screen to completely test the monitor.

Color Test

The color test (see Figure 2-18) indicates the dynamic range of the video display color circuitry. The screen should show three bands (red, green, and blue) in the left half, plus white in the right half, ranging from black to white, from left to right. The red, green, and blue bands are produced by only one color gun being turned on in each band.

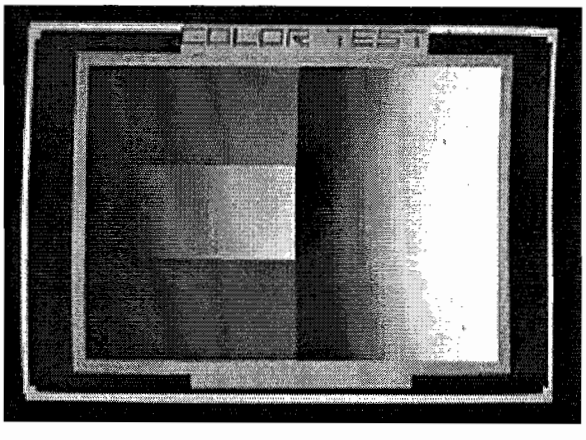


Figure 2-18 Color Test Screen

Purity Test

The next five screens are color purity tests. The entire screen will be red (see Figure 2-19), green, blue, white, and grey. Press the trigger on the joystick to change colors.

Each screen should show no unevenness of color and no lines in the display.

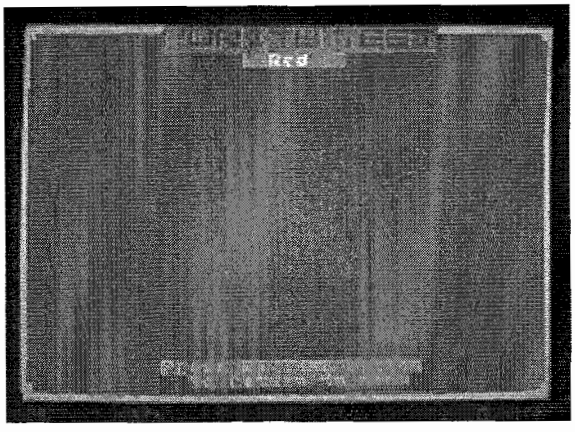


Figure 2-19 Purity Test Screen

Convergence Test

The convergence test has three screens — white, violet, and green backgrounds with grid lines. This sequence is then repeated but without any text on the screen. The white screen is shown in Figure 2-20. To see the remaining screens, press the trigger button. Press the thumb button to go to the select test menu.

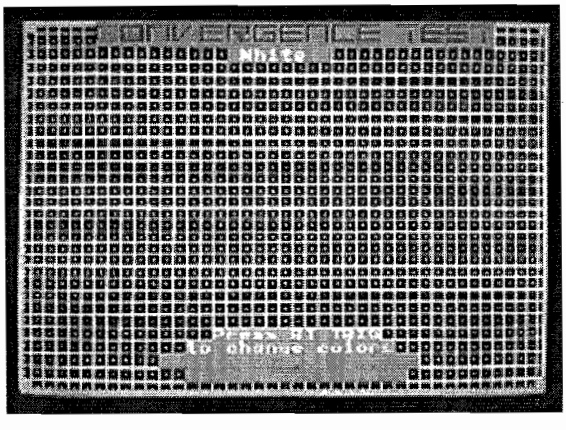


Figure 2-20 Convergence Test Screen

Check the following on the screens:

- The grid lines should be straight within 3.0 mm and the lines should not pincushion or barrel.
- The convergence of the lines on the violet and black screens should be within 2.0 mm.

If these screens do not meet these criteria, adjust the video display as described in the video display manual.

Return to the select test menu by pressing the thumb button.

Link Test

The link test checks the link between two or three T-MEK games and even within a game cabinet. Refer to the supplement CO-394-02 that describes this test in more detail.

NOTE

A link problem can remain hidden and unsolved if you do not check all linked player stations.

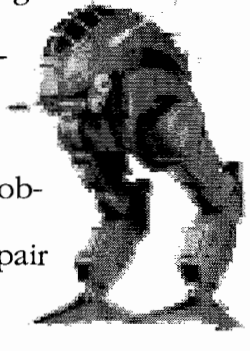
Causes of errors could be problems with the cable, terminators installed incorrectly, harnesses, or connectors.

NOTES

Troubleshooting & Maintenance

Introduction

THIS CHAPTER contains maintenance, troubleshooting and repair procedures for your T-MEK™ game. The maintenance section gives information on cleaning the parts. The troubleshooting section contains several tables to help determine the source of a problem and the steps necessary to repair it. The repair section contains the steps necessary to remove and install the serviceable parts. Together, these three sections provide a complete guide to servicing your T-MEK™ game.



Maintenance Procedures

Introduction

This section describes the maintenance procedures for all of the major assemblies and components of the game. The maintenance procedures should be performed every 3–4 months on a regular basis.

WARNING

Before performing any maintenance or repairs, please observe all of the following safety precautions:

1. *Turn the game's power off.*
2. *Unplug the power cord from the electrical socket.*
3. *Secure loose clothing such as ties and long sleeves that could get caught within the game.*
4. *Remove all metal jewelry such as watches and necklaces that could conduct electricity from the game's power sources.*

Cleaning Procedure for Coin Mechanisms

Regular use of the coin mechanisms may result in a build-up of residue and dirt. If this is the case, clean the coin mechanism by following the steps below (refer to Figure 4-6 for detailed part information on the coin door).

1. Open the upper coin door.
2. Open the gate on the door that covers the magnet. Use the blade of a screwdriver to scrape away any metal filings that have collected on the magnet.
3. Clean the loose dust and dirt from the coin mechanism with a lint-free rag or a soft brush.
4. Clean the dirt and residue from the coin path with a toothbrush. Hot, soapy water may be used to help dissolve dirt and residue.
5. Blow out all the loose dirt and dry the coin mechanism with compressed air.
6. Close the gate on the door that covers the magnet and close the upper coin door.

CAUTION

Never lubricate the coin mechanism with oil or grease.

Troubleshooting Procedures

This section is designed to help determine the source of a malfunction and detailed information on repairing the problem.

Table 3-1 General Troubleshooting, is divided into two columns. The left-hand column is broken down into the general nature of problems. The right-hand column lists suggested solutions to solve the problem.

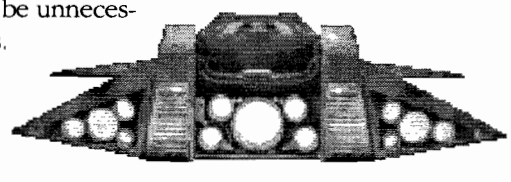
Table 3-2 ROMs and RAMs Troubleshooting, is designed to help determine the specific ROMs and RAMs that are the source of a game logic malfunction. The left-hand column shows some problems that may result from malfunctioning ROMs and RAMs. The middle column shows the ROMs and RAMs that may be the source of the problem and their purposes. The right-hand column shows the PCB locations of the ROMs and RAMs that may be causing the problem.

Table 3-3 Voltage Inputs and Test Points, is divided into three columns. The left-hand column shows the correct voltages that should be measured. The middle column shows the physical locations of the test points or LEDs. The right-hand column shows the sources and purposes of the voltages.

Repair Procedures

Introduction

This section describes the repair procedures for all of the major assemblies and components of the game. Before performing any repairs, use the tables in the *Troubleshooting Procedures* section to help narrow the source of the problem. The *Maintenance Procedures* section may also provide a good starting point for fixing many game problems before beginning what might be unnecessary repairs.



Speakers

Each player has five speakers: the front right and left (above the monitor), the rear right and left (behind the player's head) and one under the seat. The speakers provide the music and sounds for the game and self-tests. Failure of the speakers may result in distorted or no sound. If this is the case, replace the speakers by following the removal and installation steps below.

1. Remove the four screws securing the speaker grille. Then remove the speaker mounting screws.
2. Disconnect the harness from the speaker.
3. Replace and reinstall the speaker in reverse order.

Strip Lights

To replace the strip light bulbs, follow the removal and installation steps that follow.

1. Remove the plastic attraction panel at the top of the game cabinet by removing the retainers that secure it.
2. Unfasten the screws that retain the strip light brackets on top of the cabinet.
3. Lift the strip light bracket out of the slot on top of the cabinet and disconnect the harness to the PCB assembly.
4. Rotate the bulb 1/4 turn (90 degrees) in the lamp clips and remove it by pulling on the bulb.

Pot Joysticks

The pot joystick and its handle are shown in Figure 4-4. If you want to repair the joystick control, disassemble it by removing it from the pedestal. The hardware that secures the joystick assembly to the pedestal is also listed in that figure.

System Logic Assemblies

This section describes the repair and maintenance procedures for the major assemblies and components that are related to the system's logic and electronics, including the printed-circuit boards (PCBs) and the power supply. These components are housed in the bottom of the cabinet below the video display.

T-MEK Game PCB Set

The T-MEK game PCB set (board stack) is responsible for the display graphics and game play. Failure of the game PCB set may result in erratic or no game play. If this is the case, repair or replace the game PCB set by following the removal and installation steps below.

1. Unlock the rear access panel of the cabinet and remove it.
2. Disconnect the harness connectors from the game PCB set. (There are 8 connectors in all.)
3. Unfasten the screw and spacer that secures the game PCB set to the cabinet. Remove the game PCB set and its attached cover (refer to Figure 4-7).

CAUTION

Before handling static-sensitive components, properly ground yourself to discharge buildup of static charges.

4. Re-install the game PCB set by following the previous steps in the reverse order.

Electronic Game Link

Each T-MEK game is linked internally. Link kits are available from your distributor to link two or three T-MEK game cabinets together for up to six-person play. Chapter 1, Installing the Optional Cabinet Link Kit, describes the kit in more detail.

There are two DB-9 female link connectors (terminators) installed on the link panel at the rear of the cabinet. To link a T-MEK cabinet to another, remove one terminator from each cabinet and plug in the link cable instead. See Figure 2-6 for an illustration of how to link 1, 2, and 3 cabinets together. Be sure to use the self-test software (Game Options screen) to set each player station to a unique station ID. See Chapter 2 for more details.

Power Supply

The power supply is responsible for providing power to all of the game assemblies that require it. Failure of the power supply may result in erratic game play or no power at all. If this is the case, repair or replace the power supply assembly by following the steps below.

1. Unlock the rear access panel of the cabinet and remove it.
2. Disconnect the wiring harnesses from the power supply.

WARNING

The power supply can contain high voltages even after the power is turned off. To avoid injury, observe all of the safety precautions before working on the power supply. (Refer to the Introduction in the Maintenance Procedures section.)

3. Unfasten the 4 screws that secure the power supply assembly to the cabinet, and remove the power supply assembly.

Problem	Suggested Action
Coin Mechanism Problem	1. Check the wiring connections to the coin mechanism. 2. Check the voltage to the + side of the mechanism. 3. Test the coin mechanism with the Controls Test screen in the self-test. 4. Check the power distribution board fuses.
Joystick Problem	1. Check the switches and potentiometers using the Controls Test in the self-test. 2. Reset the limits on the joystick using the Controls Test in the self-test. 3. Has the control been lubricated with the correct type of lubricant? If not, lubricate it as shown in Figure 4-4. 4. Check the harnesses and connectors. 5. If you took the control apart, have you reassembled it correctly? 6. Make sure all the parts of the control are in good order. Repair or replace parts as needed.
Sound Problem	1. Check the speaker volume setting: make sure the volume isn't zero! 2. Check both parts of the Sound Test in the self-test. 3. Check the voltage on the JXPWR connector. 4. Check the connections from the Quad Amp PCB to the speakers. 5. Check the audio ROMs' checksums in the Sound Test of the self-test procedure. 6. Check the resistance of the speakers for 8 Ohms on the 4-inch speakers and 4 Ohms on the 8-inch woofer under the seat.
Video Display Problem	
Screen is dark	1. Check to see that the game is plugged in and powered on. 2. Check the line fuse if no power is present. 3. Check the display brightness. 4. Check the solder connections on the line filter and the transformer. 5. Check the edge connector to the PCB. 6. Check the harnesses and connectors to the video display PCB. 7. Check the voltage levels to the video display PCB. 8. Run through the following checklist. If you answer *no* to any question, you have a problem with the video display, not with the game circuitry. In this case, refer to your video display service manual. a. Do you have power to the video display? b. Are the video display's filaments lit? c. Do you have the correct voltage to the video display?
Only a colored screen appears	1. Attempt to run a complete RAM/ROM test in the self-test. 2. Replace the RAM if a RAM failure is reported in the self-test.
Picture wavers or is too small	1. Check the voltage levels to the video display PCB. 2. Check the B+ to the video display. (Refer to the video display manual.)
Strip light problem	1. Check the bulbs in the strip light. 2. Check the Power Distribution Board fuses. 3. Test the strip lights in the self-test.
Picture is wavy	1. Check the connection of the monitor ground wire to the monitor. 2. Check the connections of the sync inputs.
Picture is upside down or reversed	1. If you replaced the monitor recently, check the horizontal or vertical yoke wire connections to the video display. They may be switched.

Table 3-1 General Troubleshooting

Problem	Suggested Action
Convergence, purity or color problems	1. Use the self-test mode to digitally adjust the video display. 2. Use the adjustment procedures in your video display manual.
Picture is not centered	1. Use the centering procedures in your video display manual.
Electronic Game Link Problem	1. Check the harnesses and connections between all linked games. 2. Check the terminators (which are *required*) on the link plate at the back of the cabinet.

Table 3-1 General Troubleshooting, Continued

4. Re-install the power supply assembly by following the previous steps in the reverse order.

ROMs/RAMs

The ROMs and RAMs contain the programming routines used by the game PCB set to control game play. Refer to *Table 3–2 ROMs and RAMs Troubleshooting* to determine the ROMs or RAMs that are malfunctioning. Replace the damaged ROMs or RAMs by following the removal and installation steps below.

1. Remove the game PCB set according to the procedure in the *T-MEK Game PCB Set* section.

CAUTION

Before handling static-sensitive components, properly ground yourself to discharge buildup of static charges.

2. Remove the damaged ROMs and RAMs from the game PCB set using a chip extraction tool.
3. Install the new ROMs and RAMs by plugging them in the game PCB set sockets.

Problem	ROMs/RAMs Source and Purpose	Location
ROMs		
The program works, but the motion objects are incorrect or non-existent.	Motion Object ROMs and GALs (responsible for moving graphic objects)	1S, 11S–15S, 9T, 17P, 22U. Also, ROMs on rows V, W
Garbage appears on the screen or game play doesn't work correctly.	Program ROMs (responsible for game control)	24L–29L
The text or numbers are incorrect or non-existent.	Alphanumeric ROM (responsible for controlling graphic text and numbers)	22P/R
The sound is incorrect or non-existent.	Audio ROMs (responsible for controlling sound)	ROMs on Row 11 of Sound CH31 board.
The moving backgrounds graphics are incorrect or non-existent.	Playfield ROMs (responsible for controlling background graphics)	25N–28N
RAMs		
The display color is yellow.	Working RAM	
The display color is green.	Video RAM	
The display color is white.	Color RAM	

Table 3-2 ROMs and RAMs Troubleshooting

Voltage	Test Point or LED Location	Voltage Source and Purpose
+5 ± 0.25 VDC	+5V Low, 5V High	Logic power from the switching power supply.
–5 V	–V0P (pin 11 of LM324)	–5 V from the switching power supply (if connected).

Table 3-3 Voltage Inputs and Test Points

4. Re-install the game PCB set by following the steps in the *T-MEK Game PCB Set* section in the reverse order.

Video Display

To repair, replace or make adjustments to the video display, follow the removal and installation steps below.

WARNING

High Voltage

The video display contains lethal high voltages. To avoid injury, do not service this display until you observe all precautions necessary for working on high-voltage equipment.

X-Radiation

This video display is designed to minimize X-radiation. However, to avoid possible exposure to soft X-radiation, never modify the high-voltage circuitry.

Implosion Hazard

The cathode-ray tube (CRT) may implode if struck or dropped. The shattered glass from the tube may cause injury up to six feet away. Use care when handling the display and when removing it from the game cabinet. Also, wear gloves to protect your hands from the sheet-metal edges.

1. Unfasten the 8 square drive screws that secure the monitor doors to the cabinet and remove them.
2. Discharge the high-voltage from the cathode-ray tube (CRT).

NOTE

The label on the video display assembly shows a circuit for discharging the high-voltage contained in the CRT to ground when the power is off.

   a. Secure one end of a solid 18-gauge wire to a well-insulated or wooden handle screwdriver.
   b. Secure the other end of the wire to an earth ground.
   c. Briefly touch the blade end of the screwdriver to the CRT anode by sliding it under the anode cap.
   d. Wait 2 minutes and repeat the previous step.
3. Disconnect all of the wire harnesses from the video display.
4. Unfasten the 13 square drive screws that secure the light housing assembly and remove it.
5. Unfasten the 10 square drive screws that secure the lower glass retainers. Remove the display shields and card-board bezels.
6. Unfasten the 4 flat washers and nuts that secure each video display chassis to the cabinet monitor mounting brackets.
7. Remove the video display assembly from the cabinet.

NOTE

Do not attempt to remove the video display without its chassis.

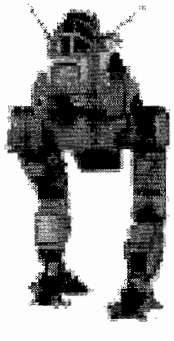
8. Install the new video display by following the previous steps (excluding steps 2a.–2d.) in the reverse order.
9. If necessary, adjust the new video display's brightness, size, centering, purity and convergence according to the video display service manual.

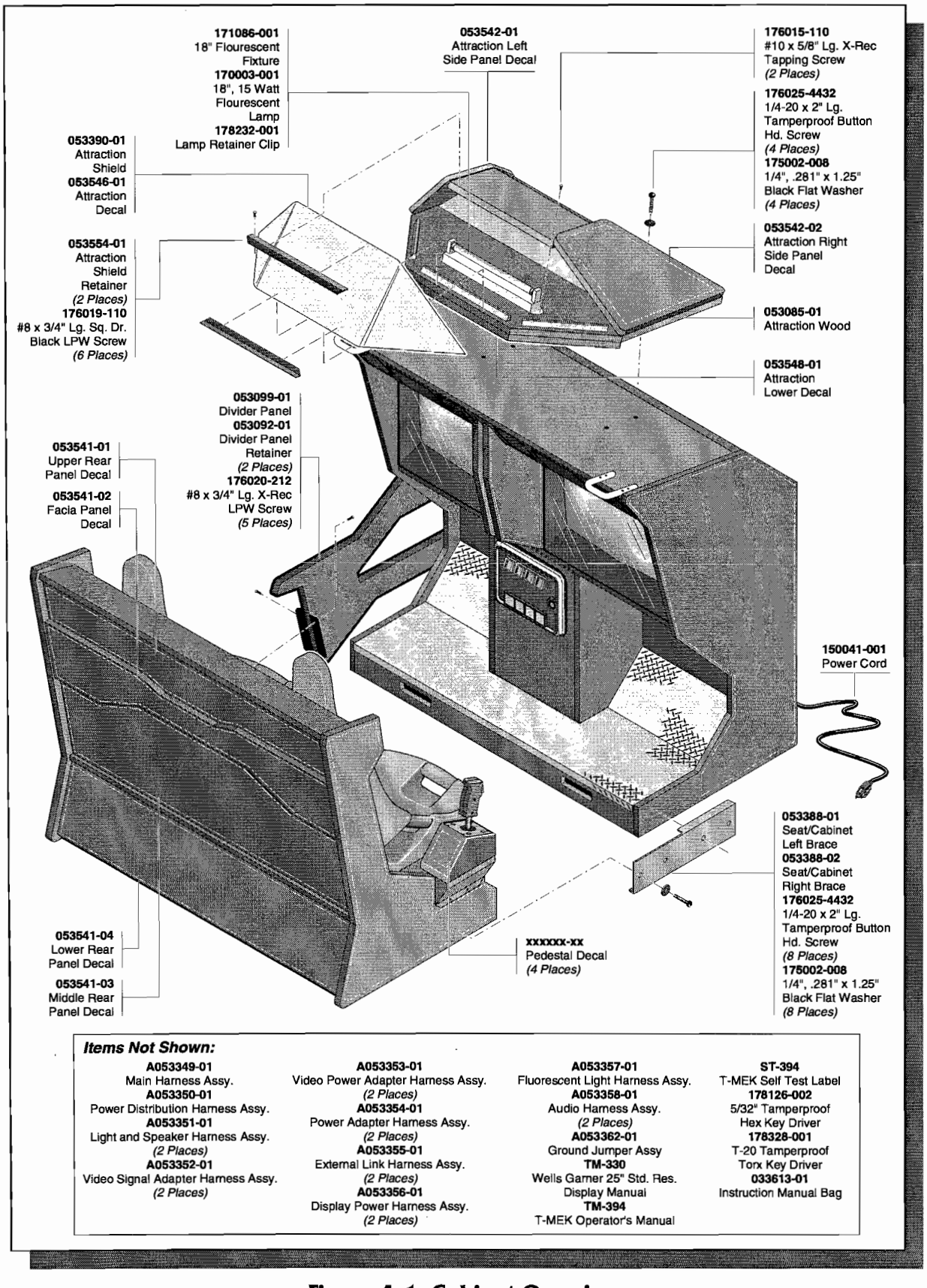
CHAPTER 4

Parts Illustrations

Part Ordering Information

THIS CHAPTER provides information you need to order parts for your game. The printed-circuit board (PCB) parts lists are arranged in alphabetical order by component. Within each section the parts are arranged numerically by part number. When you order parts, give the part number, part name, the number of this manual, and the serial number of your game. With this information, we can fill your order rapidly and correctly. We hope this will create less downtime and more profit from your games. Atari Games Customer Service phone numbers are listed on the inside front cover of this manual.





Items Not Shown:

A053349-01
Main Harness Assy.
A053350-01
Power Distribution Harness Assy.
A053351-01
Light and Speaker Harness Assy.
(2 Places)
A053352-01
Video Signal Adapter Harness Assy.
(2 Places)

A053353-01
Video Power Adapter Harness Assy.
(2 Places)
A053354-01
Power Adapter Harness Assy.
(2 Places)
A053355-01
External Link Harness Assy.
(2 Places)
A053356-01
Display Power Harness Assy.
(2 Places)

A053357-01
Fluorescent Light Harness Assy.
A053358-01
Audio Harness Assy.
(2 Places)
A053362-01
Ground Jumper Assy
TM-330
Wells Gamer 25" Std. Res. Display Manual
TM-394
T-MEK Operator's Manual

ST-394
T-MEK Self Test Label
178126-002
5/32" Tamperproof Hex Key Driver
178328-001
T-20 Tamperproof Torx Key Driver
033613-01
Instruction Manual Bag

Figure 4-1 Cabinet Overview

A051100-01 F

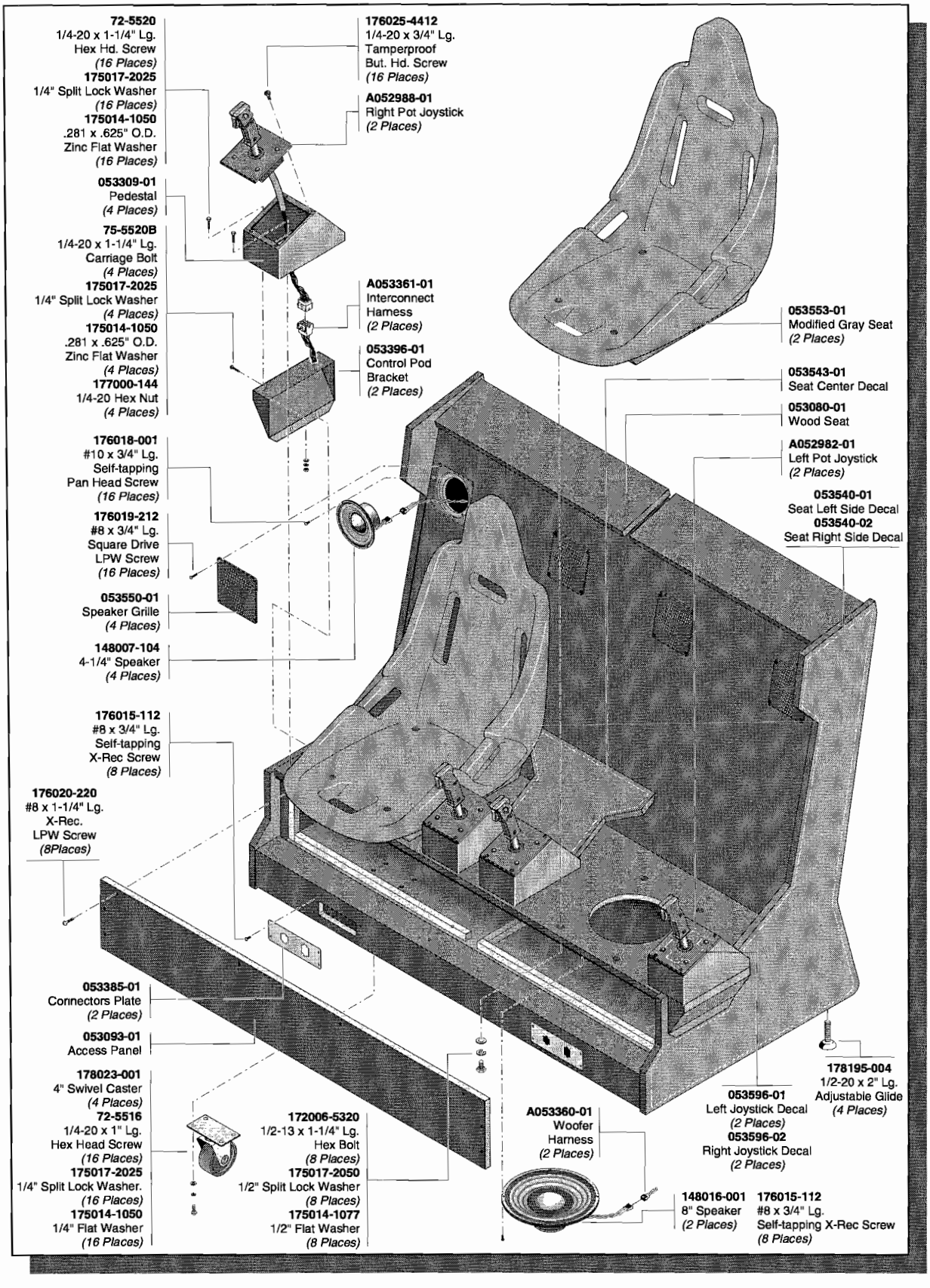


Figure 4-2 Seat Section

A051100-01 F

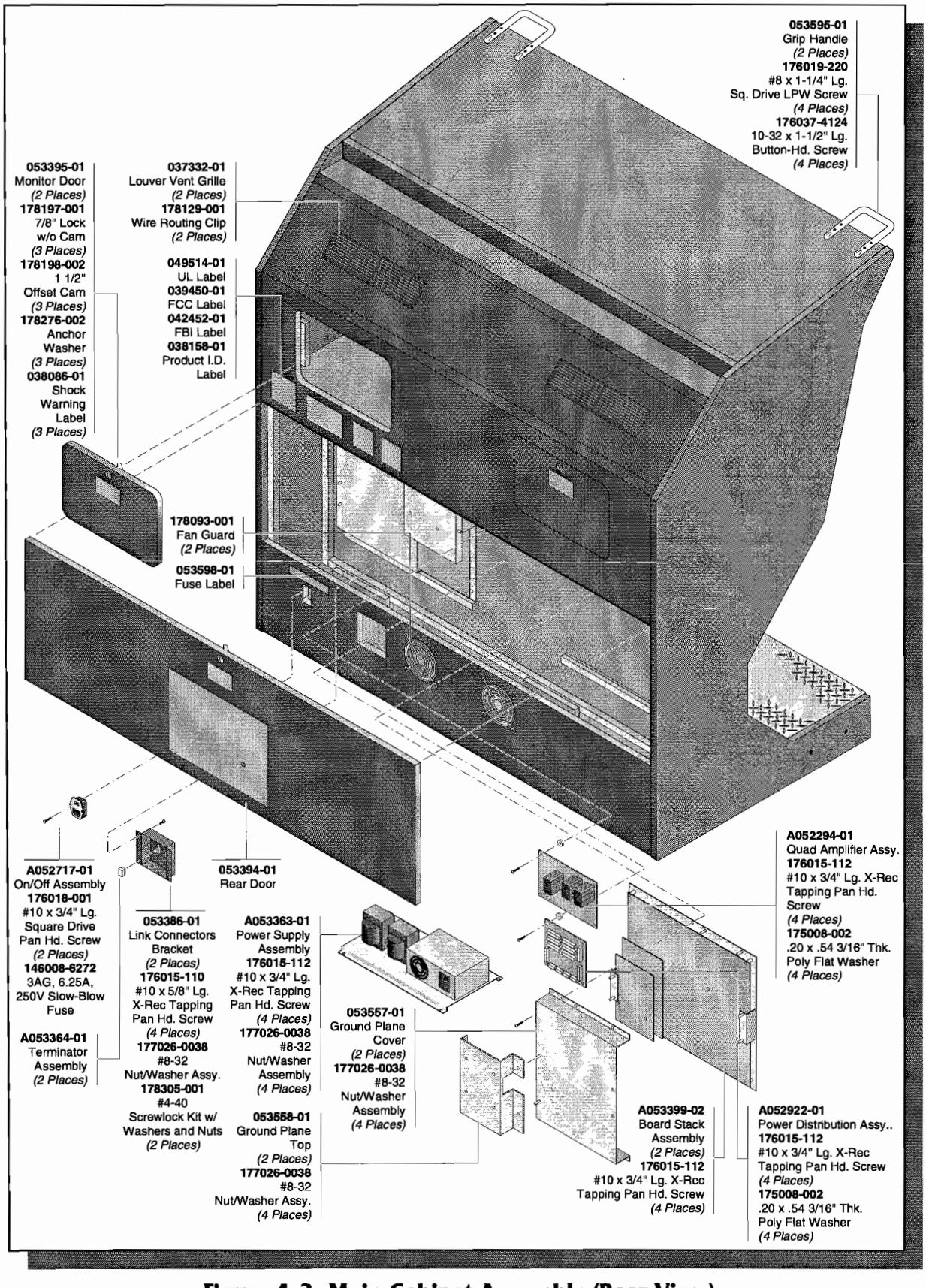


Figure 4-3 Main Cabinet Assembly (Rear View)

A051100-01 F

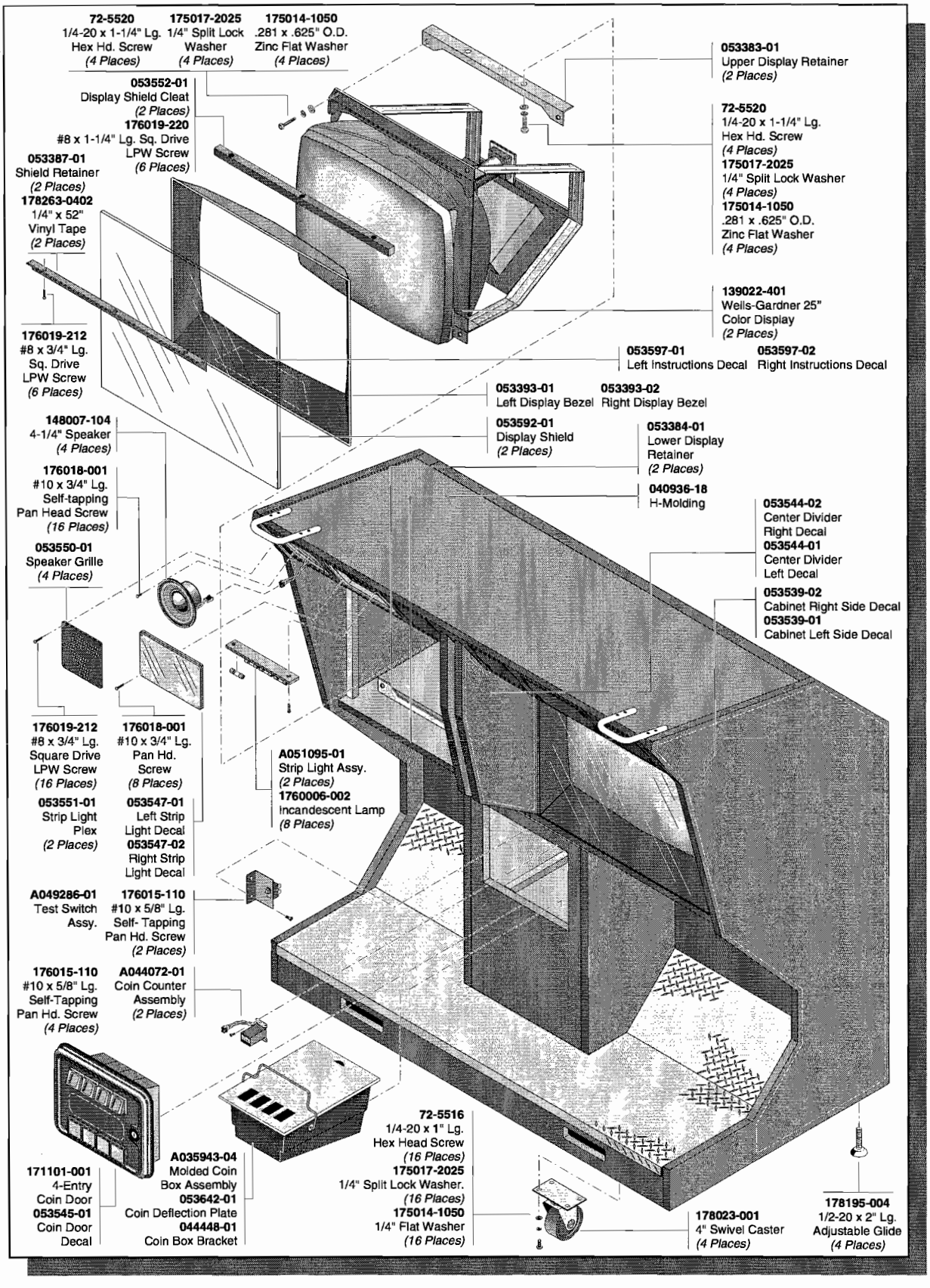


Figure 4-3 Main Cabinet Assembly, Continued (Front View)

A051100-01 F

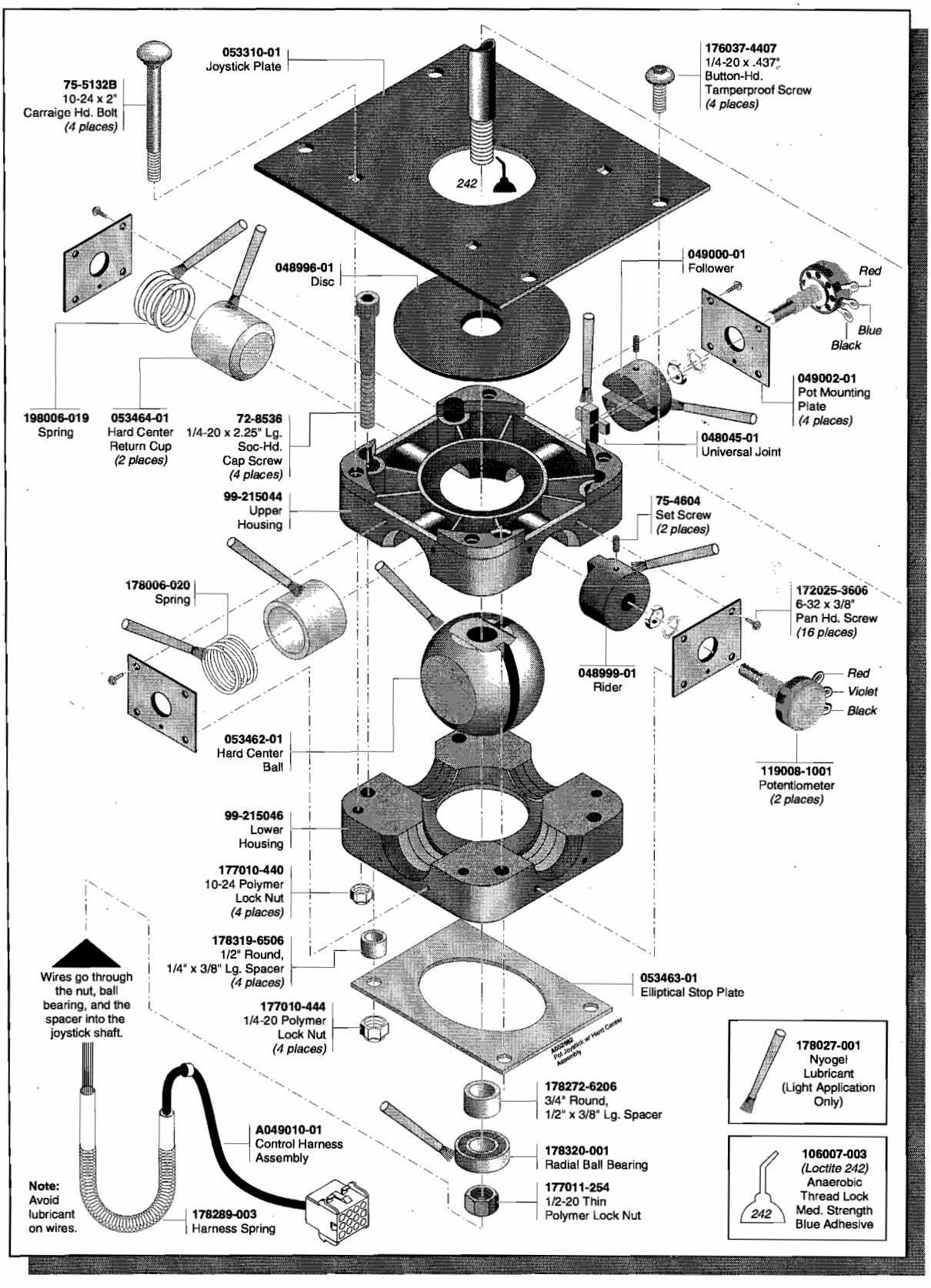


Figure 4-4 Joystick Assembly (Internal Parts)

171107-001 (??)

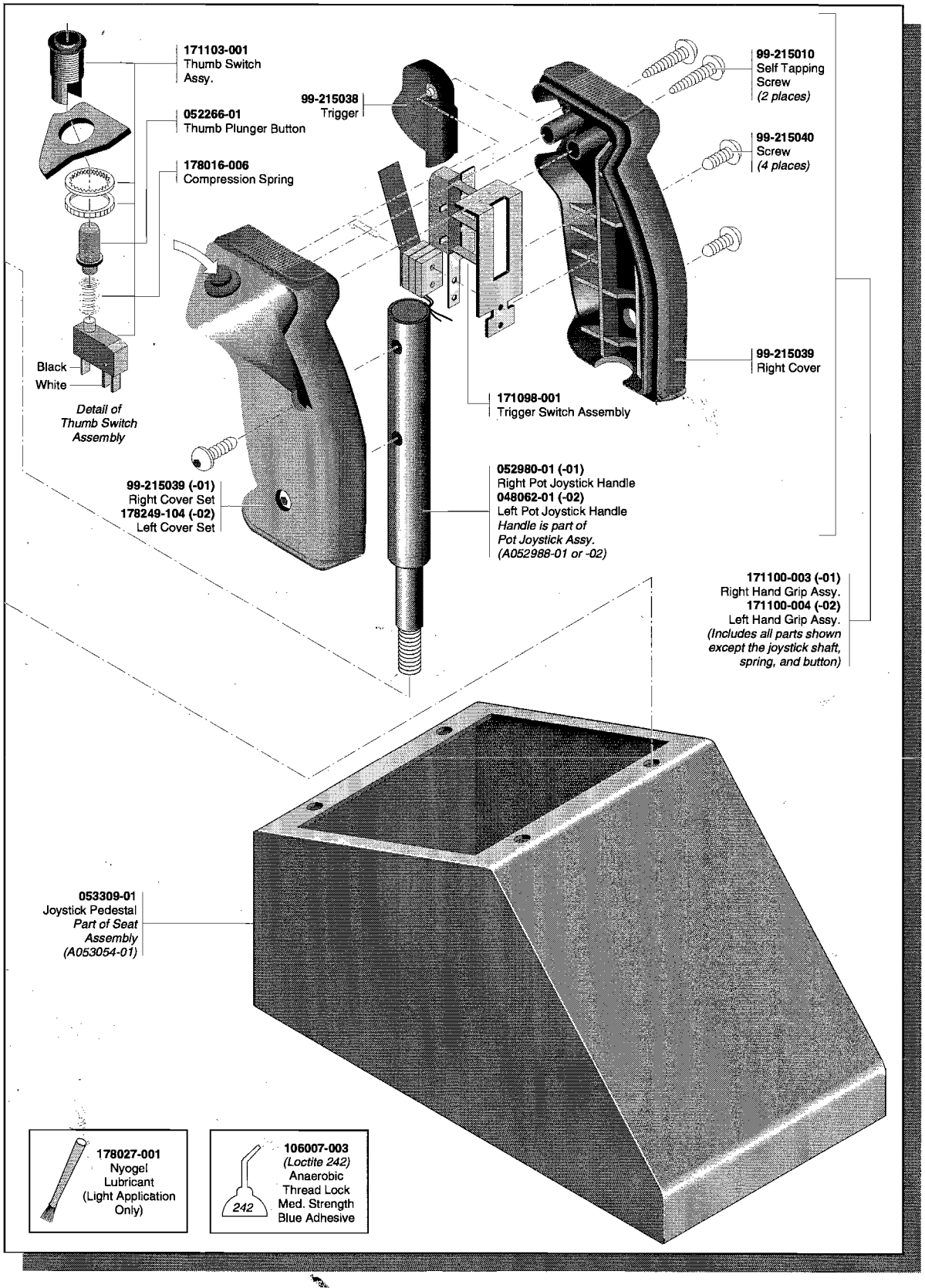


Figure 4-4 Joystick Assembly, Continued (External Parts)

171107-001 (??)

NOTES

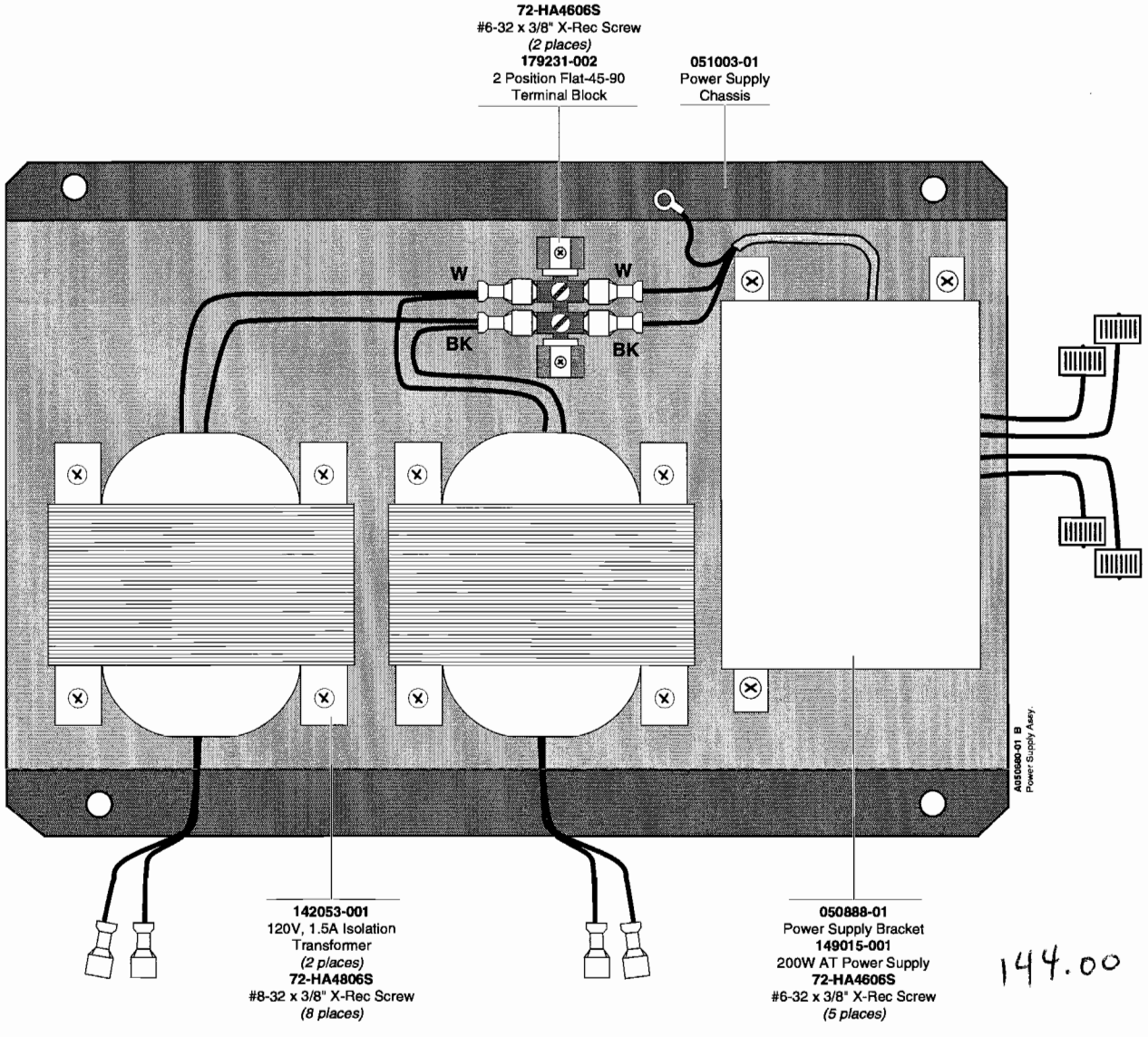


Figure 4-5 Power Supply Assembly

A050680-01 B

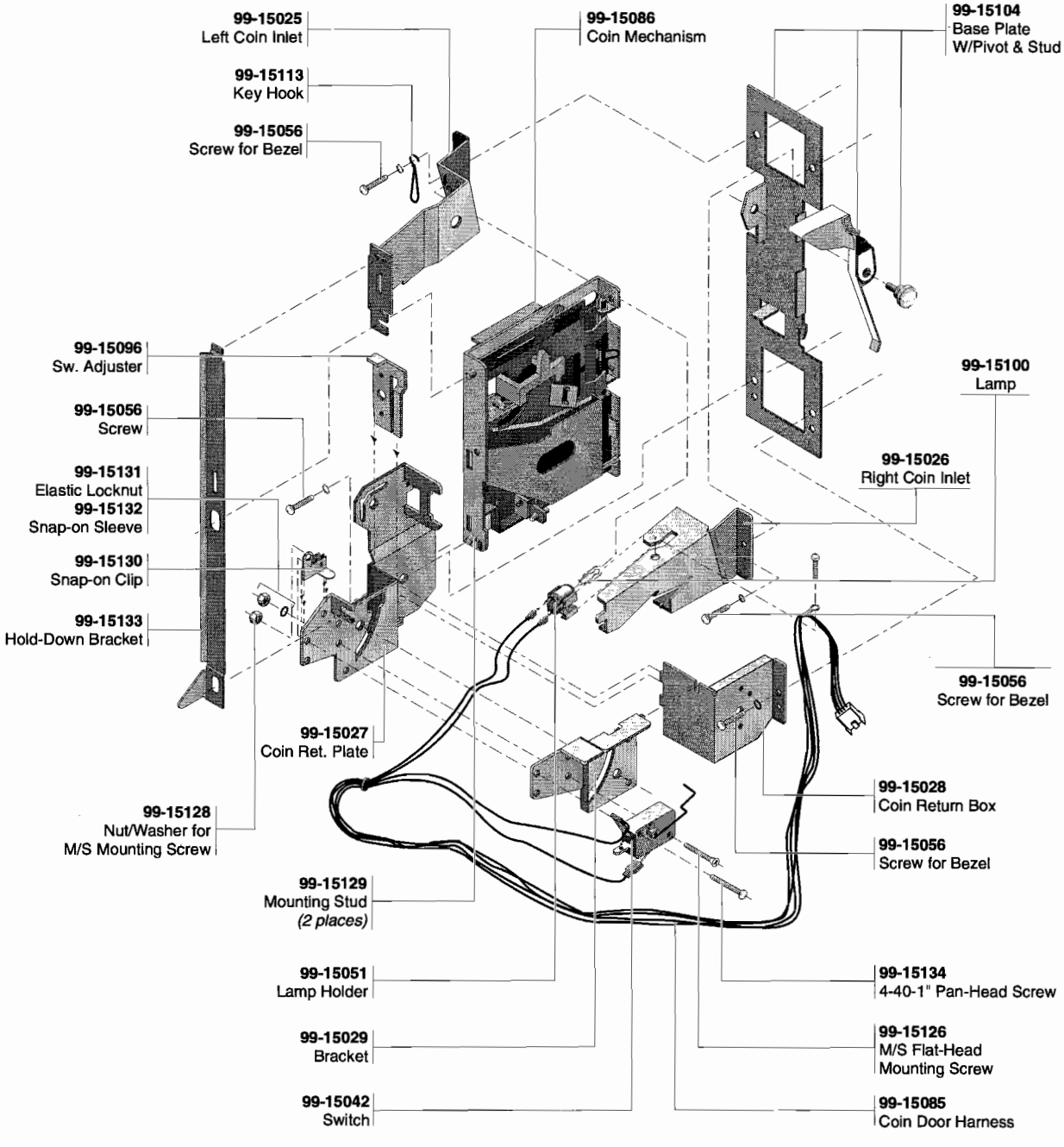
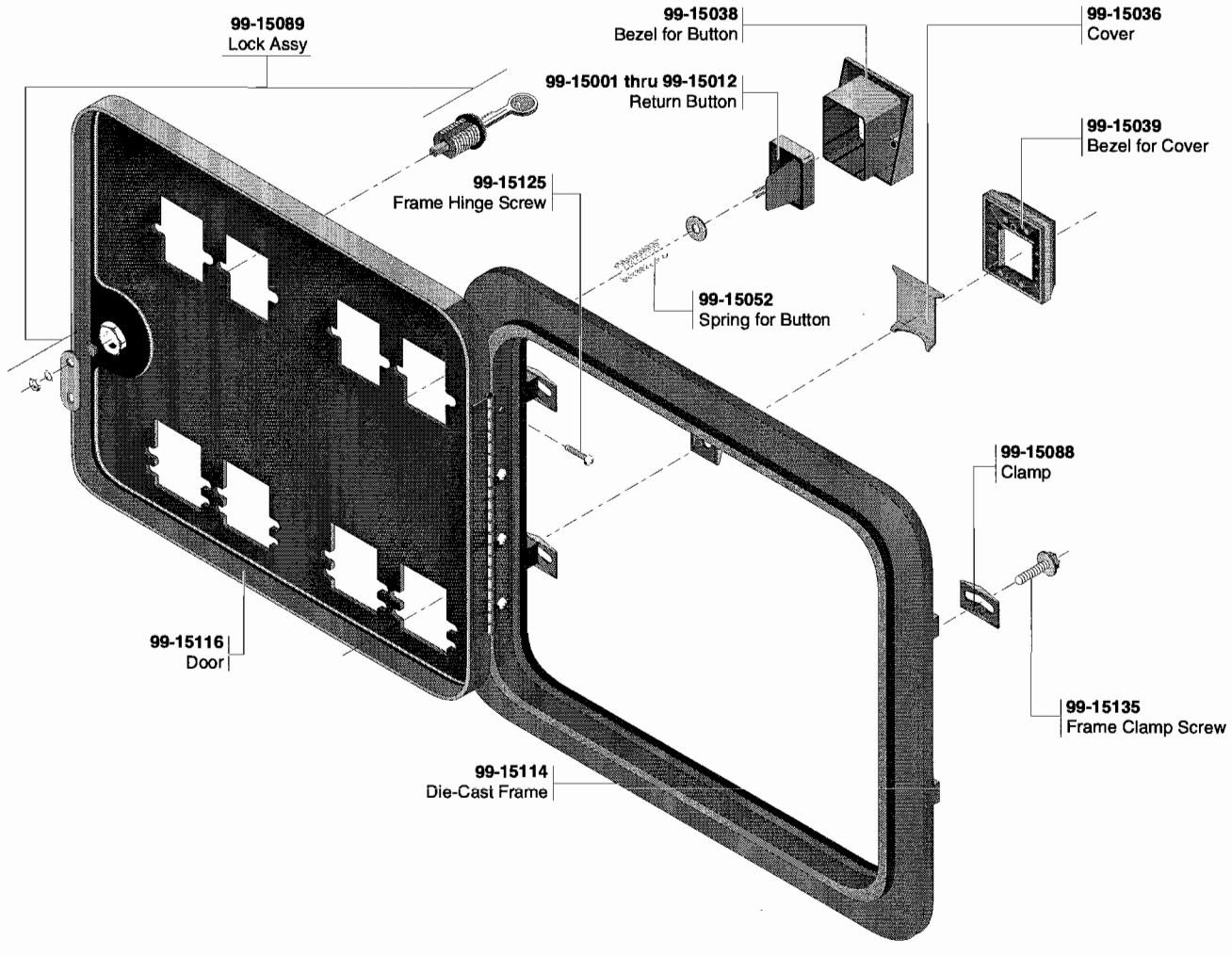


Figure 4-6 Four-Entry Coin Door Assembly

171101-001



NOTE

The Coin Box Assembly was intentionally left out of this figure and is shown in the Main Cabinet Assembly (Figure 4-3 of this manual).

Figure 4-6 Four-Entry Coin Door Assembly, Continued

171101-001

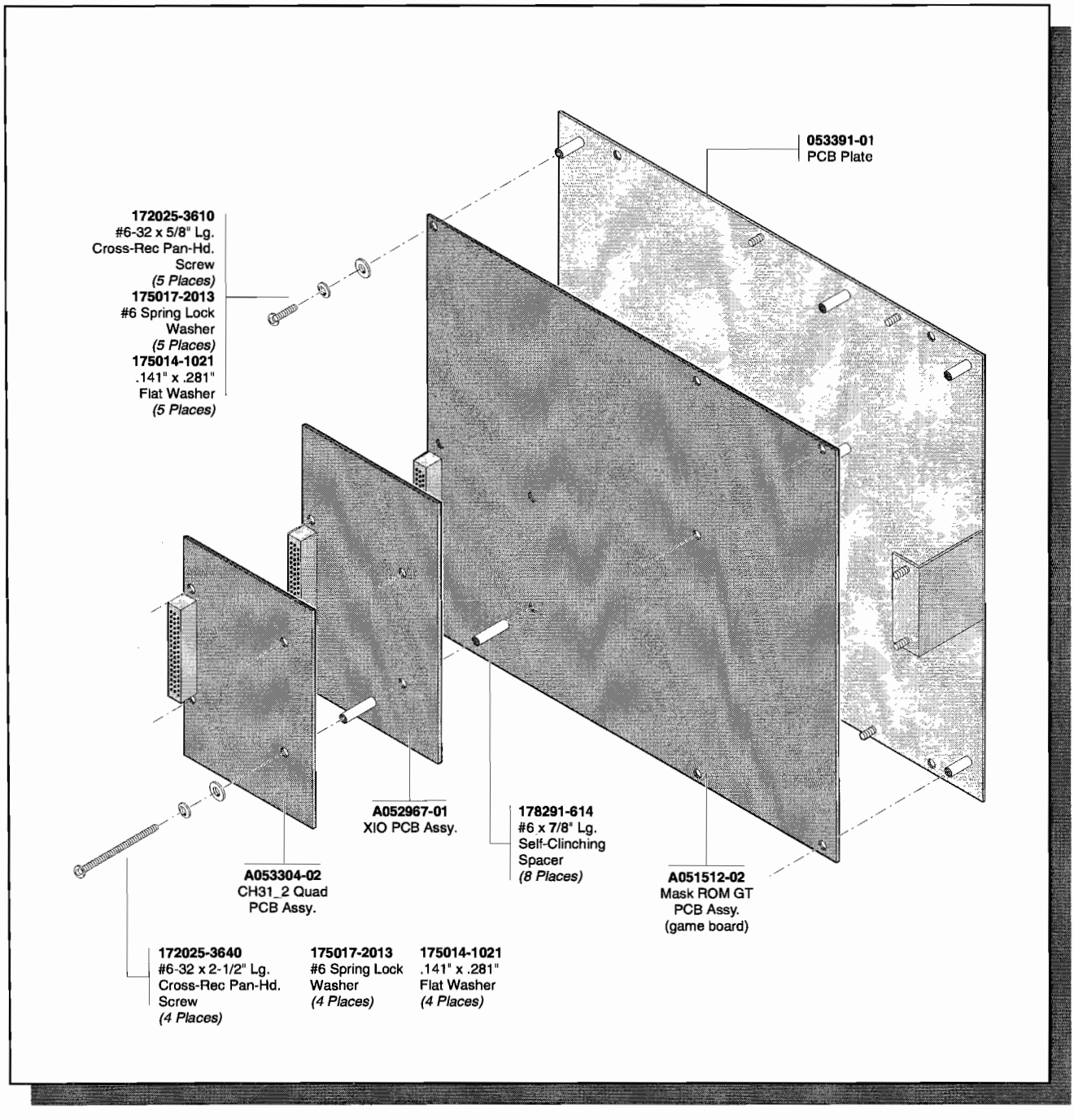


Figure 4-7 Board Stack Assembly

A053399-02 A

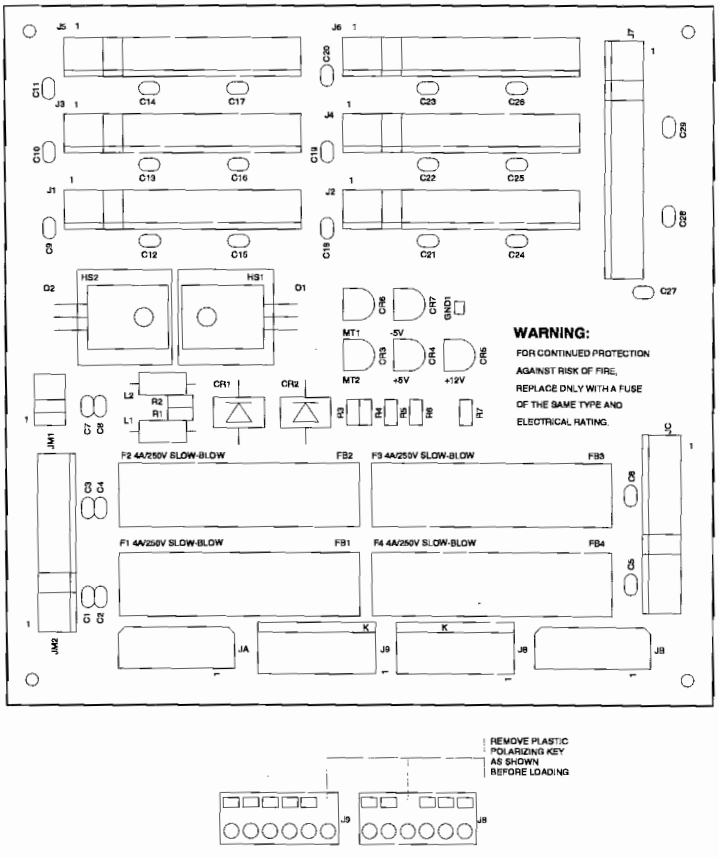


Figure 4-8 Power Distribution PCB Assembly

A052922-01 A

Power Distribution PCB Assembly Parts List

Designator	Description	Part No.
(HS1)	Nut, Hex, #4-40, Steel/Zinc	177000-132
(HS1)	Washer, Rect, #4, Steel/Zinc	178347-001
(HS1)	Washer, Int Lock, #4, Steel/Zinc	75-054
C1-C6	Capacitor, .01 µF, 50 V, +80%–20%, Ceramic	122002-103
C7, C8	Capacitor, 100 pF, 100 V, ±5%, Ceramic	122016-101
C9-C29	Capacitor, .01 µF, 50 V, +80%–20%, Ceramic	122002-103
CR1, CR2	Diode, MR822	131019-001
CR3	LED, Red, T1-3/4, Diffused, .5MCD, 80-Deg	138021-001
CR4, CR5	LED, Grn, MV5453, T1-3/4, 20-Mcd, Wide	138020-001
CR6	LED, Red, T1-3/4, Diffused, .5MCD, 80-Deg	138021-001
CR7	LED, Grn, MV5453, T1-3/4, 20-Mcd, Wide	138020-001
F1-F4	Fuse, 3AG, 4 A, 250 V, Slow Blow	146008-4022
FB1-FB4	Fuse Block, 3AG	179225-4401
GND1	Test Point	179051-001
HS1, HS2	Heat Sink, To-220, W/4-40 Stud	178063-007
(HS2)	Nut, Hex, #4-40, Steel/Zinc	177000-132
(HS2)	Washer, Rect, #4, Steel/Zinc	178347-001
(HS2)	Washer, Int Lock, #4, Steel/Zinc	75-054
J1-J7	Connector, 12 Ckt, Header, .156 Ctr, Key 3	179213-012
J8, J9	Connector, 6 Ckt, Header, .156 Ctr	179309-006
JA	Connector, 4 Ckt, Header, .200 Ctr	179310-004
JB	Connector, 4 Ckt, Header, .200 Ctr	179310-004
JC	Connector, 9 Ckt, Header, .156 Ctr, Key 6	179213-009
JM1	Connector, 4 Ckt, Header, .100 Ctr, Key 2	179118-004
JM2	Connector, 9 Ckt, Header, .156 Ctr, Key 3	179213-009
L1, L2	Inductor, Ferrite Bead, N12N	141003-005
Q1, Q2	Transistor, FET BUZ11	133054-001
R1, R2	Resistor, 27 K Ω, ±5%, 1/8 W	110027-273
R3, R4	Resistor, 1.2 K Ω, ±5%, 1/8 W	110027-122
R5, R6	Resistor, 470 Ω, ±5%, 1/8 W	110027-471
R7	Resistor, 1.2 K Ω, ±5%, 1/8 W	110027-122
(HS1, HS2)	Compound, Thermal	107031-001

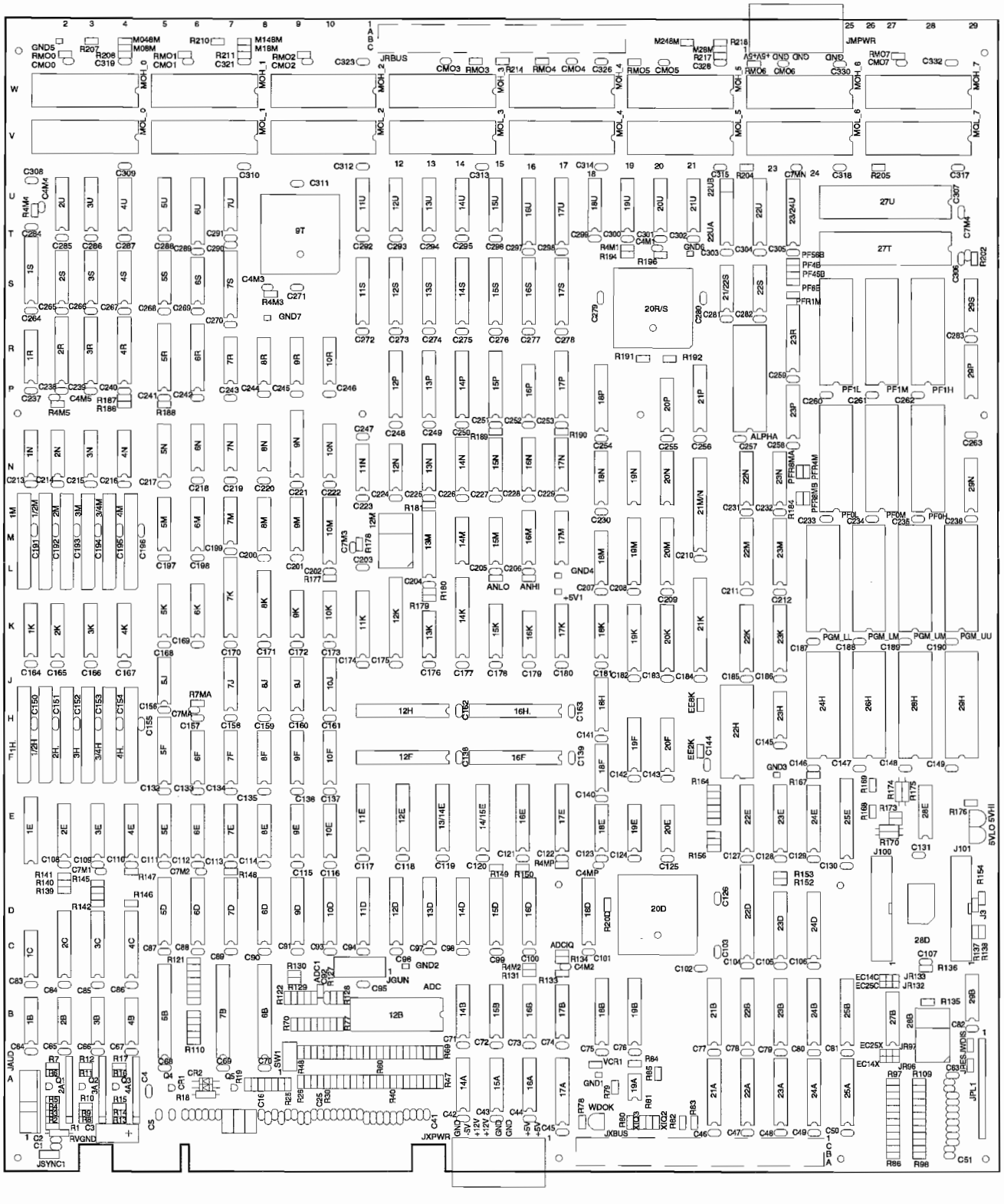


Figure 4-9 T-MEK Game (GT) PCB Assembly

A051512-02 A

T-MEK Game PCB Assembly
Parts List

Designator	Description	Part No.
1/2H, 1/2M, 1H, 1M		
	Socket, Zip 28	179302-028
1S	Socket, 20 Pin, .300, Dbl Wipe	179356-0320
2H., 2M, 3/4H, 3/4M, 3H, 3M, 4H., 4M		
	Socket, Zip 28	179302-028
5B	Socket, 28 Pin, .300, Dbl Wipe	179356-0328
5F	Socket, 20 Pin, .300, Dbl Wipe	179356-0320
5N	Socket, 16 Pin, .300, Dbl Wipe	179356-0316
7B	Socket, 28 Pin, .300, Dbl Wipe	179356-0328
7K	Socket, 24 Pin, .300, Dbl Wipe	179356-0324
8B	Socket, 28 Pin, .300, Dbl Wipe	179356-0328
8K, 9N	Socket, 20 Pin, .300, Dbl Wipe	179356-0320
9T	Socket, 68 Pin, PGA For 68PLCC	
	Integrated Circuit	179237-068
10M,11K,11S	Socket, 20 Pin, .300, Dbl Wipe	179356-0320
12B	Socket, 28 Pin, .600, Dbl Wipe	179356-0628
12F, 12H	Socket, 28 Pin, .300, Dbl Wipe	179356-0328
12K	Socket, 24 Pin, .300, Dbl Wipe	179356-0324
12S,13M,13S	Socket, 20 Pin, .300, Dbl Wipe	179356-0320
14K	Socket, 24 Pin, .300, Dbl Wipe	179356-0324
14S, 15S	Socket, 20 Pin, .300, Dbl Wipe	179356-0320
16F, 16H.	Socket, 28 Pin, .300, Dbl Wipe	179356-0328
17P, 17S	Socket, 20 Pin, .300, Dbl Wipe	179356-0320
20D, 20R/S	Socket, 68 Pin, PGA For 68PLCC	
	Integrated Circuit	179237-068
21K,21M/N	Socket, 28 Pin, .300, Dbl Wipe	179356-0328
22A	Socket, 20 Pin, .300, Dbl Wipe	179356-0320
22D	Socket, 28 Pin, .300, Dbl Wipe	179356-0328
22E	Socket, 20 Pin, .300, Dbl Wipe	179356-0320
22H	Socket, 24 Pin, .600 Dbl Wipe	179356-0624
22UB, 23E, 24E		
	Socket, 20 Pin, .300, Dbl Wipe	179356-0320
24H	Socket, 32 Pin, .600, Dbl Wipe	179356-0632
25E	Socket, 24 Pin, .300, Dbl Wipe	179356-0324
26H	Socket, 32 Pin, .600, Dbl Wipe	179356-0632
27T, 27U	Socket, 40 Pin, .600, Dbl Wipe	179356-0640
28H, 29H	Socket, 32 Pin, .600, Dbl Wipe	179356-0632
(JXBUS)	Shroud 96CKT DIN41621	179369-0096
++1005V1	Test Point	179051-001
1	Pr, 1020-68PLCC Fpga, 20D Xxxx	136101-0005
1	Pr, EPROM, 128KX8, 100 ns, Alpha Xxxx	136101-0045
1	Pr, EPROM, 128KX8, 100 ns, Pgm Ll Xxxx	136101-0041
1	Pr, EPROM, 128KX8, 100 ns, Pgm Um Xxxx	136101-0043
1	Pr, EPROM, 128KX8, 100 ns, Pgm Lm Xxxx	136101-0042
1	Pr, EPROM, 128KX8, 100 ns, Pgm Uu Xxxx	136101-0044
1/2H,1/2M	Integrated Circuit, Vram, 256KX4, 100 ns	137682-100
1B	Integrated Circuit, 74LS11	137149-001
1C	Integrated Circuit, 7406	137052-001
1E	Integrated Circuit, 74LS244	137038-001
1H	Integrated Circuit, Vram, 256KX4, 100 ns	137682-100
1K	Integrated Circuit, 74F157	137494-001
1M	Integrated Circuit, Vram, 256KX4, 100 ns	137682-100
1N	Integrated Circuit, 74F08	137483-001
1R	Integrated Circuit, 74F163	137345-001
2A	Res, R2R10, 1K/2K, SIP10	118015-001
2B	Integrated Circuit, 74LS27	137062-001
2C	Integrated Circuit, 74HCT273	137655-001
2E	Integrated Circuit, 74LS157	137029-001
2H.	Integrated Circuit, Vram, 256KX4, 100 ns	137682-100
2K	Integrated Circuit, 74F157	137494-001
2M	Integrated Circuit, Vram, 256KX4, 100 ns	137682-100
2N	Integrated Circuit, 74F08	137483-001
2R	Integrated Circuit, 74LS377	137145-001
2S	Integrated Circuit, 74F378	137612-001
2U	Integrated Circuit, 74F163	137345-001
3/4H, 3/4M	Integrated Circuit, Vram, 256KX4, 100 ns	137682-100
3A	Res, R2R10, 1K/2K, SIP10	118015-001
3B	Integrated Circuit, 74LS27	137062-001
3C	Integrated Circuit, 74HCT273	137655-001
3E	Integrated Circuit, 74LS157	137029-001
3H	Integrated Circuit, Vram, 256KX4, 100 ns	137682-100
3K	Integrated Circuit, 74F157	137494-001
3M	Integrated Circuit, Vram, 256KX4, 100 ns	137682-100
3N	Integrated Circuit, 74F08	137483-001
3R	Integrated Circuit, 74F377	137622-001
3S	Integrated Circuit, 74F157	137494-001
3U	Integrated Circuit, 74F378	137612-001
4A	Res, R2R10, 1K/2K, SIP10	118015-001
4B	Integrated Circuit, 74LS27	137062-001
4C	Integrated Circuit, 74HCT273	137655-001
4E	Integrated Circuit, 74LS157	137029-001
4H.	Integrated Circuit, Vram, 256KX4, 100 ns	137682-100
4K	Integrated Circuit, 74F157	137494-001
4M	Integrated Circuit, Vram, 256KX4, 100 ns	137682-100
4N	Integrated Circuit, 74F32	137486-001

T-MEK Game PCB Assembly, Continued
Parts List

Designator	Description	Part No.
4R	Integrated Circuit, 74LS377	137145-001
4S	Integrated Circuit, 74F157	137494-001
4U	Integrated Circuit, 74F163	137345-001
5B	Integrated Circuit, Sram, 32KX8, 25 ns, .3	137670-025
5D	Integrated Circuit, 74LS245	137134-001
5E	Integrated Circuit, 74LS157	137029-001
5J	Integrated Circuit, 74F08	137483-001
5K, 5M	Integrated Circuit, 74F157	137494-001
5R	Integrated Circuit, 74LS244	137038-001
5S, 5U	Integrated Circuit, 74F169	137496-001
5VHI,5VLO	LED, Red, T1-3/4, Diffused, .5MCD, 80-Deg	138021-001
6D	Integrated Circuit, 74F374	137420-001
6E	Integrated Circuit, 74LS157	137029-001
6F, 6K, 6M	Integrated Circuit, 74F157	137494-001
6N	Integrated Circuit, 74F32	137486-001
6R	Integrated Circuit, 74LS244	137038-001
6S	Integrated Circuit, 74F260	137570-001
6U	Integrated Circuit, 74F377	137622-001
7B	Integrated Circuit, Sram, 32KX8, 25 ns, .3	137670-025
7D	Integrated Circuit, 74LS245	137134-001
7E	Integrated Circuit, 74LS157	137029-001
7F, 7J	Integrated Circuit, 74F153	137492-001
7M	Integrated Circuit, 74LS74	137023-001
7N	Integrated Circuit, 74F32	137486-001
7R	Integrated Circuit, 74F08	137483-001
7S	Integrated Circuit, 74F377	137622-001
7U	Integrated Circuit, 74F169	137496-001
8B	Integrated Circuit, Sram, 32KX8, 25 ns, .3	137670-025
8D	Integrated Circuit, 74F374	137420-001
8E	Integrated Circuit, 74LS157	137029-001
8F, 8J	Integrated Circuit, 74F153	137492-001
8M	Integrated Circuit, 74F174	137531-001
8N	Integrated Circuit, 74F08	137483-001
8R	Integrated Circuit, 74F02	137481-001
9D	Integrated Circuit, 74LS245	137134-001
9E	Integrated Circuit, 74LS157	137029-001
9F, 9J	Integrated Circuit, 74F153	137492-001
9K	Integrated Circuit, 74F260	137570-001
9M	Integrated Circuit, 74F163	137345-001
9R	Integrated Circuit, 74F00	137327-001
10D	Integrated Circuit, 74F374	137420-001
10E	Integrated Circuit, 74LS157	137029-001
10F, 10J	Integrated Circuit, 74F153	137492-001
10K	Integrated Circuit, 74LS86	137079-001
10N	Integrated Circuit, 74LS163 A	137114-001
10R	Integrated Circuit, 74F04	137437-001
11D, 11E	Integrated Circuit, 74F273	137610-001
11N	Integrated Circuit, 74F04	137437-001
11U	Integrated Circuit, 74F163	137345-001
12B	Integrated Circuit, ADC0809	137243-001
12D, 12E	Integrated Circuit, 74F374	137420-001
12F, 12H	Integrated Circuit, Sram, 32KX8, 25 ns, .3	137670-025
12M	Xtal, 28.636MHZ, Osc. Module	144008-009
12N	Integrated Circuit, 74F74	137436-001
12P	Integrated Circuit, 74F273	137610-001
12U	Integrated Circuit, 74F163	137345-001
13/14E,13D	Integrated Circuit, 74LS245	137134-001
13K	Integrated Circuit, 74F32	137486-001
13N	Integrated Circuit, 74F74	137436-001
13P	Integrated Circuit, 74F374	137420-001
13U	Integrated Circuit, 74F163	137345-001
14/15E	Integrated Circuit, 74F273	137610-001
14A, 14B	Integrated Circuit, 74LS257	137136-001
14D	Integrated Circuit, 74F273	137610-001
14M	Integrated Circuit, 74F00	137327-001
14N	Integrated Circuit, 74F157	137494-001
14P	Integrated Circuit, 74F374	137420-001
14U	Integrated Circuit, 74F163	137345-001
15A, 15B	Integrated Circuit, 74LS257	137136-001
15D	Integrated Circuit, 74F374	137420-001
15K	Integrated Circuit, 74F153	137492-001
15M	Integrated Circuit, 74F86	137649-001
15N	Integrated Circuit, 74F153	137492-001
15P	Integrated Circuit, 74F374	137420-001
15U	Integrated Circuit, 74F163	137345-001
16A, 16B	Integrated Circuit, 74LS257	137136-001
16D	Integrated Circuit, 74LS245	137134-001
16E	Integrated Circuit, 74F374	137420-001

T-MEK Game PCB Assembly, Continued
Parts List

Designator	Description	Part No.
16F, 16H	Integrated Circuit, Sram, 32KX8, 25 ns, .3	137670-025
16K	Integrated Circuit, 74LS04	137009-001
16M, 16N	Integrated Circuit, 74F153	137492-001
16P	Integrated Circuit, 74F151	137490-001
16S	Integrated Circuit, 74F374	137420-001
16U	Integrated Circuit, 74F244	137502-001
17A	Integrated Circuit, 74LS273	137040-001
17B	Integrated Circuit, 74LS148	137417-001
17E	Integrated Circuit, 74LS245	137134-001
17K	Integrated Circuit, 74LS157	137029-001
17M, 17N	Integrated Circuit, 74F153	137492-001
17U	Integrated Circuit, 74F244	137502-001
18B, 18D	Integrated Circuit, 74LS245	137134-001
18E	Integrated Circuit, 74F04	137437-001
18F	Integrated Circuit, 74LS74	137023-001
18H	Integrated Circuit, 74F138	137521-001
18K, 18M	Integrated Circuit, 74F153	137492-001
18N	Integrated Circuit, 74LS163 A	137114-001
18U	Integrated Circuit, 74F163	137345-001
19A	Integrated Circuit, DS1232	137762-001
19B	Integrated Circuit, 74LS273	137040-001
19E	Integrated Circuit, 74LS74	137023-001
19F	Integrated Circuit, 74F138	137521-001
19K, 19M	Integrated Circuit, 74LS245	137134-001
19N	Integrated Circuit, 74LS163 A	137114-001
19U	Integrated Circuit, 74F163	137345-001
20E	Integrated Circuit, 74F08	137483-001
20F	Integrated Circuit, 74F138	137521-001
20K, 20M	Integrated Circuit, 74LS374	137144-001
20N	Integrated Circuit, 74LS163 A	137114-001
20P	Integrated Circuit, 74LS378	137305-001
20R/S	Integrated Circuit, Cpu, Plcc	137658-101
20U	Integrated Circuit, 74F163	137345-001
21/22S	Integrated Circuit, 74F04	137437-001
21B	Integrated Circuit, 74LS245	137134-001
21K,21M/N	Integrated Circuit, Sram, 32KX8, 25 ns, .3	137670-025
21P	Integrated Circuit, 74LS377	137145-001
21U	Integrated Circuit, 74F163	137345-001
22B	Integrated Circuit, 74LS245	137134-001
22D	Integrated Circuit, Sram, 8KX8, 35 ns, .3	137667-035
22H	Integrated Circuit, 28C16-200, 200 ns	137648-200
22K, 22M	Integrated Circuit, 74LS245	137134-001
22N	Integrated Circuit, 74LS378	137305-001
22S	Integrated Circuit, 74F04	137437-001
22U,23/24U	Integrated Circuit, 74LS273	137040-001
23A	Integrated Circuit, 74LS244	137038-001
23B	Integrated Circuit, 74LS273	137040-001
23D	Integrated Circuit, 74LS245	137134-001
23H	Integrated Circuit, 74F32	137486-001
23K, 23M	Integrated Circuit, 74LS374	137144-001
23N	Integrated Circuit, 74LS378	137305-001
23P	Integrated Circuit, 74LS157	137029-001
23R	Integrated Circuit, 74LS377	137145-001
24A	Integrated Circuit, 74LS245	137134-001
24B, 24D	Integrated Circuit, 74F245	137591-001
24H	Integrated Circuit, Sram, 128KX8, 70 ns	137702-070
25A	Integrated Circuit, 74LS245	137134-001
25B	Integrated Circuit, 74F245	137591-001
26H	Integrated Circuit, Sram, 128KX8, 70 ns	137702-070
27B	Integrated Circuit, 74F163	137345-001
27T	Integrated Circuit, SOS	137550-001
27U	Integrated Circuit, Pfhs	137419-104
28B	Xtal, 50.000MHZ, Osc. Module	144008-005
28D	Integrated Circuit, Cpu, 68EC020, 25MHz, 100PQFP	137691-025
28E	Integrated Circuit, LM613	137746-001
28H	Integrated Circuit, Sram, 128KX8, 70 ns	137702-070
29B	Integrated Circuit, 74F20	137530-001
29H	Integrated Circuit, Sram, 128KX8, 70 ns	137702-070
29N	Integrated Circuit, 74LS298	137201-001
29P	Integrated Circuit, 74LS153	137104-001
29S	Integrated Circuit, 74LS298	137201-001
A	Pr, Fpla, 20NS, 9T 446D	136094-0004
A	Pr, GAL16V8, 25NS, 22E 8F15	136101-0025
A	Pr, GAL16V8, 15NS, 23E 75C3	136101-0013
A	Pr, GAL16V8, 25NS, 24E 477 A	136101-0018
A	Pr, GAL16V8, 10NS, 22UB 4216	136101-0220
A	Pr, GAL16V8, 10NS, 1S B535	136101-0006
A	Pr, GAL16V8, 25NS, 9N 5AED	136101-0012
A	Pr, GAL16V8, 25NS, 12S 4A81	136094-0014
A	Pr, GAL16V8, 25NS, 17P 270 A	136094-0015
A	Pr, GAL16V8, 25NS, 13M 58E8	136101-0008
A	Pr, GAL16V8, 15NS, 22A 2A8 A	136101-0021

T-MEK Game PCB Assembly, Continued
Parts List

Designator	Description	Part No.
A	Pr, GAL16V8, 15NS, 5F 2E9 A	136101-0024
A	Pr, GAL16V8, 25NS, 11K 72ED	136101-0011
A	Pr, GAL16V8, 25NS, 10M 326F	136101-0009
A	Pr, GAL16V8, 25NS, 17S 3139	136094-0007
A	Pr, GAL16V8, 25NS, 8K 5ADE	136101-0010
A	Pr, GAL16V8, 25NS, 11S 25F2	136094-0016
A	Pr, GAL20V8, 25NS, 7K 9CA6	136101-0019
A	Pr, GAL22V10, 25NS, 14K 51ED	136101-0023
A	Pr, GAL22V10, 10NS, 25E D358	136101-0017
A	Pr, GAL22V10, 15NS, 12K 7751	136101-0022
A	Pr, Mrom, 1MX8, 100NS, Moh 5 521E	136101-0311
A	Pr, Mrom, 1MX8, 100NS, Mol 5 84AA	136101-0310
A	Pr, Mrom, 1MX8, 100NS, Moh 2 CA0C	136101-0305
A	Pr, Mrom, 1MX8, 100NS, Mol 2 EC5F	136101-0304
A	Pr, Mrom, 1MX8, 100NS, Moh 1 8641	136101-0303
A	Pr, Mrom, 1MX8, 100NS, Mol 0 Aecd	136101-0300
A	Pr, Mrom, 1MX8, 100NS, Mol 7 7988	136101-0314
A	Pr, Mrom, 1MX8, 100NS, Moh 0 CEF7	136101-0301
A	Pr, Mrom, 1MX8, 100NS, Moh 4 F023	136101-0309
A	Pr, Mrom, 1MX8, 100NS, Mol 4 D1D0	136101-0308
A	Pr, Mrom, 512KX8, 150NS, PF0H 213E	136101-0252
A	Pr, Mrom, 1MX8, 100NS, Moh 3 92AA	136101-0307
A	Pr, Mrom, 1MX8, 100NS, Moh 7 14EE	136101-0315
A	Pr, Mrom, 512KX8, 150NS, PF0M 9C81	136101-0251
A	Pr, Mrom, 512KX8, 150NS, PF0L 874B	136101-0250
A	Pr, Mrom, 1MX8, 100NS, Mol 6 8C68	136101-0312
A	Pr, Mrom, 1MX8, 100NS, Moh 6 3B1F	136101-0313
A	Pr, Mrom, 1MX8, 100NS, Mol 3 191E	136101-0306
A	Pr, Mrom, 1MX8, 100NS, Mol 1 C18E	136101-0302
A	Pr, PROM, 82S147, 15S 9B61	136094-0003
A	Pr, PROM, 82S147, 13S 76B6	136094-0001
A	Pr, PROM, 82S147, 14S FD85	136094-0002
ADC1	Connector, 2 Circuit, Header, .100 Ctr	179048-002
ALPHA	Socket, 32 Pin, .600, Dbl Wipe	179356-0632
ANLO	Resistor, 10 Ω, ±5%, 1/8 W	110027-100
C1, C2	Capacitor, 100 pF, 100 V, ±5%, Cer.	122016-101
C3	Capacitor, 100 µF, 16 V, Electro., Axial	124008-107
C4	Capacitor, .1 µF, 50 V, +80%-20%, Cer.	122002-104
C4M1-C4M5, C4MP	Capacitor, 47 pF, 100 V, ±5%, Ceramic	122016-470
C5-C8	Capacitor, .01 µF, 50 V, +80%–20%, Cer.	122002-103
C7M1-C7M4, C7MA, C7MN	Capacitor, 47 pF, 100 V, ±5%, Ceramic	122016-470
C9-C12	Capacitor, 1000 pF, 100 V, ±10%, Cer.	122015-102
C13-C15	Capacitor, 270PFC, 50 V, EMI Filter	140006-271
C16	Capacitor, 100 pF, 100 V, ±5%, Cer.	122016-101
C17	Capacitor, .1 µF, 50 V, +80%-20%, Cer.	122002-104
C18	Capacitor, .01 µF, 50 V, +80%-20%, Cer.	122002-103
C19	Capacitor, .1 µF, 50 V, +80%-20%, Cer.	122002-104
C20, C21	Capacitor, .01 µF, 50 V, +80%-20%, Cer.	122002-103
C22, C23	Capacitor, .1 µF, 50 V, +80%-20%, Cer.	122002-104
C24-C31	Capacitor, .01 µF, 50 V, +80%-20%, Cer.	122002-103
C32-C37	Capacitor, .1 µF, 50 V, +80%-20%, Cer.	122002-104
C38-C41	Capacitor, .01 µF, 50 V, +80%-20%, Cer.	122002-103
C42-C50	Capacitor, .1 µF, 50 V, +80%-20%, Cer.	122002-104
C51, C52	Capacitor, .01 µF, 50 V, +80%-20%, Cer.	122002-103
C53-C60	Capacitor, .1 µF, 50 V, +80%-20%, Cer.	122002-104
C61, C62	Capacitor, .01 µF, 50 V, +80%-20%, Cer.	122002-103
C63-C317, C319, C321, C323, C326, C328, C330, C332	Capacitor, .1 µF, 50 V, +80%-20%, Cer.	122002-104
CMO0-CMO7	Capacitor, 47 pF, 100 V, ±5%, Ceramic	122016-470
CR1, CR2	Diode, 1N4001	131048-001
EC25C, EC25X, EE2K	Resistor, 10 Ω, ±5%, 1/8 W	110027-100
GND1--7	Test Point	179051-001
J3	Connector, 2 Circuit, Header, .100 Ctr	179048-002
JAUD	Connector, 6 Ckt, Hdr, .156 Ctr, Key 3	179213-006
JMPWR	Connector, 9 Ckt, Hdr, .156 Ctr, Rt, Key 3	179165-009
JPL1	Connector, 15 Ckt, Header, .100 Ctr	179118-015
JRBUS	Connector, 96 Ckt, Rcpt, Pressfit, Long	179368-0096
JRBUS	Shroud 96CKT DIN41621	179369-0096
JRES	Connector, 2 Circuit, Header, .100 Ctr	179048-002
JSYNC1	Connector, 3 Ckt, Header, .100 Ctr	179048-003
JWDIS	Connector, 2 Circuit, Header, .100 Ctr	179048-002
JXBUS	Connector, 96 Ckt, Rcpt, Pressfit, Long	179368-0096
JXPWR	Connector, 9 Ckt, Header, .156 Ctr, Rt, Key 3	179165-009
M8M, M18M, M28M, M48M, M148M, M248M	Resistor, 10 Ω, ±5%, 1/8 W	110027-100

T-MEK Game PCB Assembly, Continued
Parts List

Designator	Description	Part No.
MOH_0-MOH_7, MOL_0-MOL_7		
	Socket, 32 Pin, .600, Dbl Wipe	179356-0632
PF0H, PF0L, PF0M, PF1H, PF1L, PF1M		
	Socket, 32 Pin, .600, Dbl Wipe	179356-0632
PF6B, PF56B, PFR4M		
	Resistor, 10 Ω, ±5%, 1/8 W	110027-100
PGM_LL	Socket, 32 Pin, .600, Dbl Wipe	179356-0632
PGM_LM	Socket, 32 Pin, .600, Dbl Wipe	179356-0632
PGM_UM	Socket, 32 Pin, .600, Dbl Wipe	179356-0632
PGM_UU	Socket, 32 Pin, .600, Dbl Wipe	179356-0632
Q1-Q3	Transistor, 2N3904	133041-001
Q4, Q5	Transistor, 2N5306	133033-001
R1	Resistor, 470 Ω, ±5%, 1/8 W	110027-471
R2	Resistor, 100 Ω, ±5%, 1/8 W	110027-101
R3	Resistor, 470 Ω, ±5%, 1/8 W	110027-471
R4	Resistor, 10 Ω, ±5%, 1/8 W	110027-100
R4M1-R4M5, R4MP		
	Resistor, 47 Ω, ±5%, 1/8 W	110027-470
R5	Resistor, 15 Ω, ±5%, 1/8 W	110027-150
R6	Resistor, 1 K Ω, ±5%, 1/8 W	110027-102
R7	Resistor, 2.4 K Ω, ±5%, 1/8 W	110027-242
R7MA	Resistor, 47 Ω, ±5%, 1/8 W	110027-470
R8	Resistor, 100 Ω, ±5%, 1/8 W	110027-101
R9	Resistor, 10 Ω, ±5%, 1/8 W	110027-100
R10	Resistor, 15 Ω, ±5%, 1/8 W	110027-150
R11	Resistor, 1 K Ω, ±5%, 1/8 W	110027-102
R12	Resistor, 2.4 K Ω, ±5%, 1/8 W	110027-242
R13	Resistor, 100 Ω, ±5%, 1/8 W	110027-101
R14	Resistor, 10 Ω, ±5%, 1/8 W	110027-100
R15	Resistor, 15 Ω, ±5%, 1/8 W	110027-150
R16	Resistor, 1 K Ω, ±5%, 1/8 W	110027-102
R17	Resistor, 2.4 K Ω, ±5%, 1/8 W	110027-242
R18	Resistor, 0 Ω, ±5%, 1/4 W	110005-001
R19, R20	Resistor, 1 K Ω, ±5%, 1/8 W	110027-102
R20D	Resistor, 10 Ω, ±5%, 1/8 W	110027-100
R21	Resistor, 470 Ω, ±5%, 1/8 W	110027-471
R22-R25	Resistor, 1 K Ω, ±5%, 1/8 W	110027-102
R26, R27	Resistor, 470 Ω, ±5%, 1/8 W	110027-471
R28-R35	Resistor, 1 K Ω, ±5%, 1/8 W	110027-102
R36-R45	Resistor, 470 Ω, ±5%, 1/8 W	110027-471
R46	Resistor, 1 K Ω, ±5%, 1/8 W	110027-102
R47	Resistor, 470 Ω, ±5%, 1/8 W	110027-471
R48, R49	Resistor, 1 K Ω, ±5%, 1/8 W	110027-102
R50-R53	Resistor, 470 Ω, ±5%, 1/8 W	110027-471
R58-R68	Resistor, 1 K Ω, ±5%, 1/8 W	110027-102
R69	Resistor, 470 Ω, ±5%, 1/8 W	110027-471
R70-R77	Resistor, 10 K Ω, ±5%, 1/8 W	110027-103
R78-R83	Resistor, 1 K Ω, ±5%, 1/8 W	110027-102
R84	Resistor, 4.7 K Ω, ±5%, 1/8 W	110027-472
R85-R97	Resistor, 1 K Ω, ±5%, 1/8 W	110027-102
R98-R109	Resistor, 470 Ω, ±5%, 1/8 W	110027-471
R124	Resistor, 100 Ω, ±5%, 1/8 W	110027-101
R125	Resistor, 220 Ω, ±5%, 1/8 W	110027-221
R126, R127	Resistor, 100 Ω, ±5%, 1/8 W	110027-101
R128	Resistor, 10 K Ω, ±5%, 1/8 W	110027-103
R131	Resistor, 1 K Ω, ±5%, 1/8 W	110027-102
R133	Resistor, 470 Ω, ±5%, 1/8 W	110027-471
R134	Resistor, 4.7 K Ω, ±5%, 1/8 W	110027-472
R136	Resistor, 10 K Ω, ±5%, 1/8 W	110027-103
R137, R138	Resistor, 220 Ω, ±5%, 1/8 W	110027-221
R147, R148	Resistor, 47 Ω, ±5%, 1/8 W	110027-470
R149	Resistor, 1 K Ω, ±5%, 1/8 W	110027-102
R150	Resistor, 10 Ω, ±5%, 1/8 W	110027-100
R152	Resistor, 1 K Ω, ±5%, 1/8 W	110027-102
R153	Resistor, 2.2 K Ω, ±5%, 1/8 W	110027-222
R154	Resistor, 10 K Ω, ±5%, 1/8 W	110027-103
R156-R158	Resistor, 100 Ω, ±5%, 1/8 W	110027-472
R159	Resistor, 1 K Ω, ±5%, 1/8 W	110027-102
R160	Resistor, 10 Ω, ±5%, 1/8 W	110027-100
R161, R162	Resistor, 1 K Ω, ±5%, 1/8 W	110027-102
R163, R164	Resistor, 10 Ω, ±5%, 1/8 W	110027-100
R167	Resistor, 510 Ω, ±5%, 1/8 W	110027-510
R169	Resistor, 10 K Ω, ±5%, 1/8 W	110027-103
R170	Resistor, 11.0 K Ω, ±1%, 1/4 W	110034-1102
R171	Resistor, 10.5 K Ω, ±1%, 1/4 W	110034-1052
R172	Resistor, 1 K Ω, ±5%, 1/8 W	110027-102
R173	Resistor, 39 K Ω, ±5%, 1/8 W	110027-393
R174, R175	Resistor, 39.2 K Ω, ±1%, 1/4 W	110034-3922
R176	Resistor, 470 Ω, ±5%, 1/8 W	110027-471
R178	Resistor, 47 Ω, ±5%, 1/8 W	110027-470
R179, R180	Resistor, 10 K Ω, ±5%, 1/8 W	110027-103
R181	Resistor, 4.7 K Ω, ±5%, 1/8 W	110027-472
R184	Resistor, 10 K Ω, ±5%, 1/8 W	110027-103
R186	Resistor, 1 K Ω, ±5%, 1/8 W	110027-102
R187, R188	Resistor, 10 Ω, ±5%, 1/8 W	110027-100

T-MEK Game PCB Assembly, Continued
Parts List

Designator	Description	Part No.
R189	Resistor, 470 Ω, ±5%, 1/8 W	110027-471
R190	Resistor, 10 K Ω, ±5%, 1/8 W	110027-103
R191, R192	Resistor, 1 K Ω, ±5%, 1/8 W	110027-102
R194	Resistor, 470 Ω, ±5%, 1/8 W	110027-471
R196	Resistor, 1 K Ω, ±5%, 1/8 W	110027-102
R202	Resistor, 47, ±5%, 1/8 W	110027-470
R204	Resistor, 4.7 K Ω, ±5%, 1/8 W	110027-472
R205	Resistor, 47 Ω, ±5%, 1/8 W	110027-470
R207, R208, R210, R211, R214, R217, R218	Resistor, 10 K Ω, ±5%, 1/8 W	110027-103
RMO0–7	Resistor, 47 Ω, ±5%, 1/8 W	110027-470
RVGND	Resistor, 0 Ω, ±5%, 1/4 W	110005-001
SW1	Switch, Slide, SPDT	160040-001
VCR1	Connector, 2 Circuit, Header, .100 Ctr	179048-002
WDOK	LED, Red, T1-3/4, Diffused, .5MCD, 80-Deg	138021-001
XIQ2	Resistor, 10 Ω, ±5%, 1/8 W	110027-100

Notes

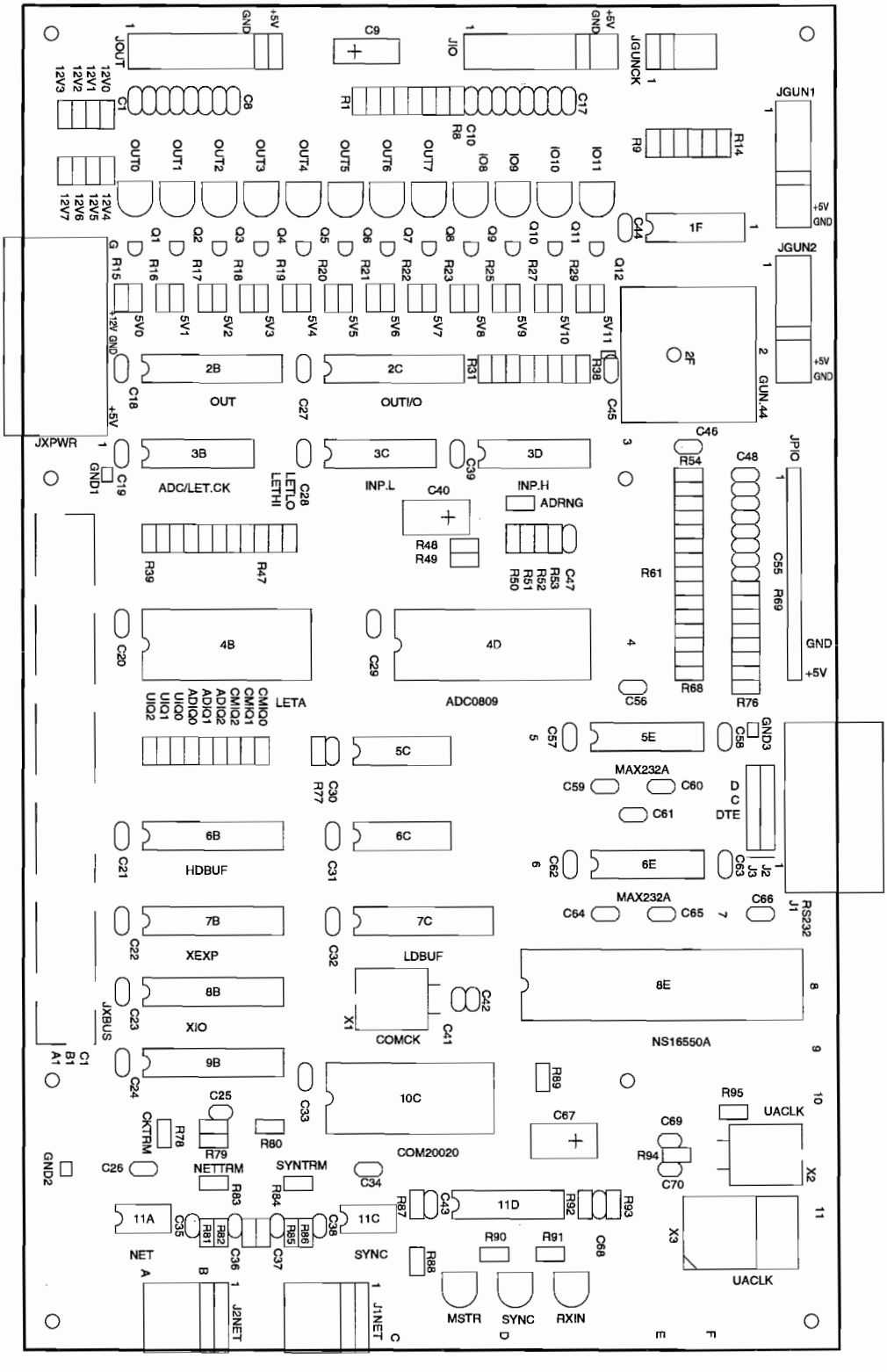


Figure 4-10 XIO PCB Assembly

A052967-01 A

XIO PCB Assembly
Parts List

Designator	Description	Part No.
7B, 8B	Socket, 20 Pin, .300, Dbl Wipe	179356-0320
10C	Socket, 24 Pin, .600 Dbl Wipe	179356-0624
11A, 11C	Socket, 8 Pin, .300, Dbl Wipe	179356-0308
(JXBUS)	Shroud, 96 Pos, Pinless	179369-0096
2B	Integrated Circuit, 74LS273	137040-001
5C	Integrated Circuit, 7406	137052-001
5V4-5V7	Res, 240, ±5%, 1/8 W	110027-241
7C, 9B	Integrated Circuit, 74LS245	137134-001
10C	Integrated Circuit, Controller, Univ Lan, 2KX8 RAM	137710-001
11A, 11C	Integrated Circuit, LTC485	137711-001
11D	Integrated Circuit, 74LS123	137268-001
12V0-12V3	Res, 820 Ω, ±5%, 1/8 W	110027-821
A	Pr, GAL16V8, 15NS, 8B 6AF4	136101-0030
C1-C8	Capacitor, .1 µF, 50 V, +80%–20%, Ceramic	122002-104
C9	Capacitor, 10 µF, 25 V, Electrolytic	124009-106
C18-C24, C26-C34	Capacitor, .1 µF, 50 V, +80%–20%, Ceramic	122002-104
C35-C38	Capacitor, 100 pF, 100 V, ±5%, Ceramic	122016-101
C39	Capacitor, .1 µF, 50 V, +80%–20%, Ceramic	122002-104
C41, C42	Capacitor, 33 pF, 100 V, ±5%, Ceramic	122016-330
C43-C46, C56, C61, C66	Capacitor, .1 µF, 50 V, +80%–20%, Ceramic	122002-104
C67	Capacitor, 1 µF, 50 V, Electrolytic	124001-105
C68	Capacitor, 100 pF, 100 V, ±5%, Ceramic	122016-101
CKTRM	Connector, 2 Ckt, Header, .100 Ctr	179048-002
CMIQ1	Res, 10 Ω, ±5%, 1/8 W	110027-100
GND1-GND3	Test Point	179051-001
J1NET, J2NET	Connector, 6 Circuit, Header, .100 Ctr, Rt, Key 2	179026-006
JOUT	Connector, 11 Ckt, Header, .100 Ctr, Key 10	179118-011
JXBUS	Connector, 96 Ckt, Rcpt, Pressfit, Long	179368-0096
JXPWR	Connector, 9 Ckt, Header, .156 Ctr, Rt, Key 3	179165-009
MSTR	LED, Red, T1-3/4, Diffused, .5MCD, 80-Deg	138021-001
NETTRM	Connector, 2 Ckt, Header, .100 Ctr	179048-002
OUT0-OUT7	LED, Red, T1-3/4, Diffused, .5MCD, 80-Deg	138021-001
Q1-Q8	Transistor, 2N5306	133033-001
R15-R22	Resistor, 1 K Ω, ±5%, 1/8 W	110027-102
R47	Resistor, 10 K Ω, ±5%, 1/8 W	110027-103
R78	Resistor, 330 Ω, ±5%, 1/8 W	110027-331
R79	Resistor, 220 Ω, ±5%, 1/8 W	110027-221
R81	Resistor, 2.7 K Ω, ±5%, 1/8 W	110027-272
R82	Resistor, 120 Ω, ±5%, 1/8 W	110027-121
R83, R84	Resistor, 2.7 K Ω, ±5%, 1/8 W	110027-272
R85	Resistor, 120 Ω, ±5%, 1/8 W	110027-121
R86	Resistor, 2.7 K Ω, ±5%, 1/8 W	110027-272
R87	Resistor, 2 K Ω, ±5%, 1/8 W	110027-202
R88, R90, R91	Resistor, 220 Ω, ±5%, 1/8 W	110027-221
R92, R93	Resistor, 47 K Ω, ±5%, 1/8 W	110027-473
RXIN.	LED, Red, T1-3/4, Diffused, .5MCD, 80-Deg	138021-001
SYNC	LED, Red, T1-3/4, Diffused, .5MCD, 80-Deg	138021-001
SYNTRM	Connector, 2 Ckt, Header, .100 Ctr	179048-002
X1	Crystal, 20.000 MHz	144000-003

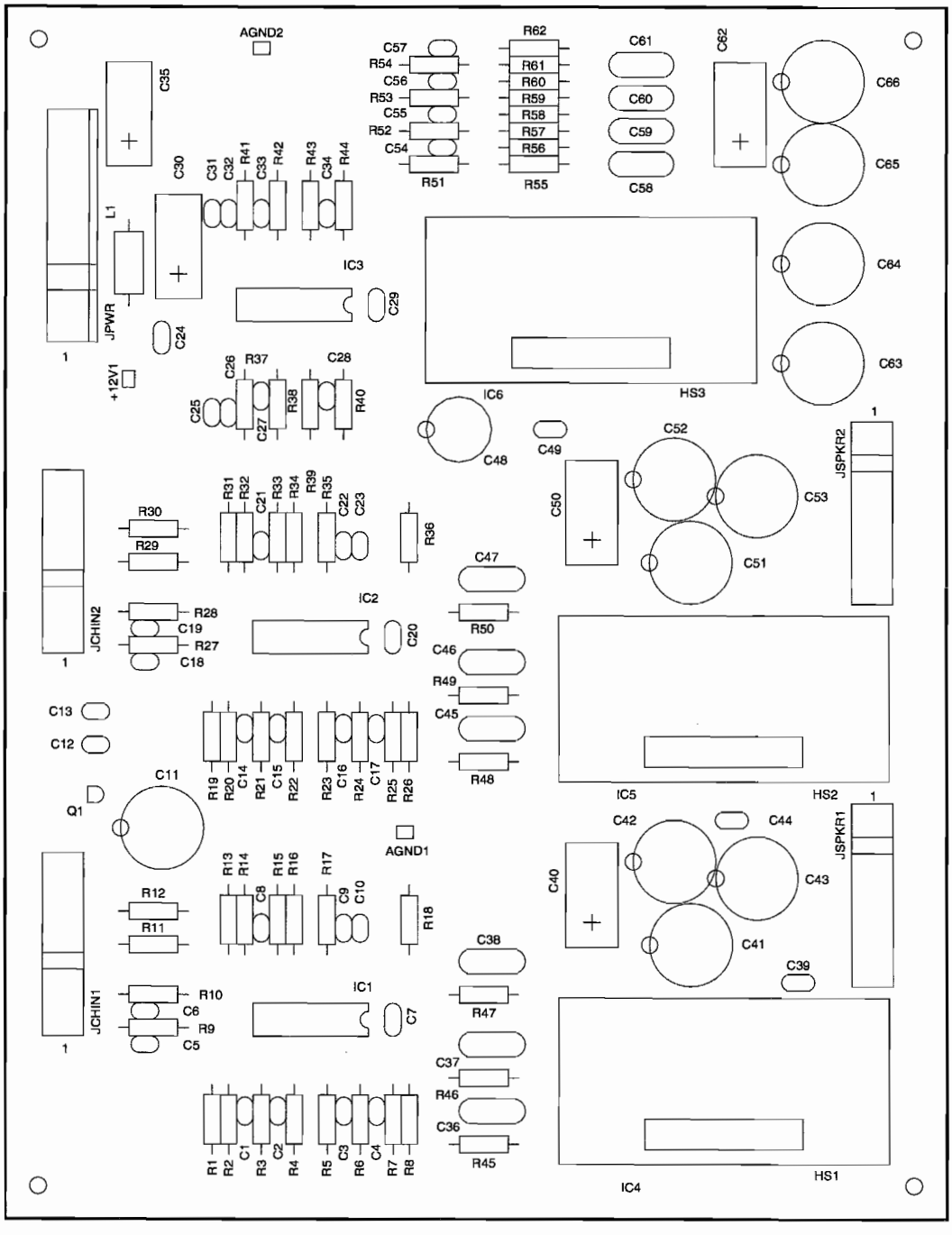


Figure 4-11 Quad Amp PCB Assembly

A052294-01 B

Quad Amp PCB Assembly
Parts List

Designator	Description	Part No.
(HS1-HS3)	Screw, Pan, 4-40X3/8, X-Rec, Cad	172025-3206
++1012V1	Test Point	179051-001
AGND1, 2	Test Point	179051-001
C1-C6	Capacitor, .047 µF, 50 V, ±10%, Ceramic	122015-473
C7	Capacitor, .1 µF, 50 V, +80%-20%, Cera.	122002-104
C8	Capacitor, .047 µF, 50 V, ±10%, Ceramic	122015-473
C9	Capacitor, .012, 50 V, ±10%, Ceramic	122015-123
C10	Capacitor, .047 µF, 50 V, ±10%, Ceramic	122015-473
C11	Capacitor, 1000 µF, 25 V, Electrolytic, Rad	123024-108
C12, C13	Capacitor, .33, 50 V, ±20%, Ceramic	122026-334
C14-C19	Capacitor, .047 µF, 50 V, ±10%, Ceramic	122015-473
C20	Capacitor, .1 µF, 50 V, +80%-20%, Cera.	122002-104
C21	Capacitor, .047 µF, 50 V, ±10%, Ceramic	122015-473
C22	Capacitor, .012, 50 V, ±10%, Ceramic	122015-123
C23	Capacitor, .047 µF, 50 V, ±10%, Ceramic	122015-473
C24	Capacitor, .1 µF, 50 V, +80%-20%, Cera.	122002-104
C25-C28	Capacitor, .047 µF, 50 V, ±10%, Ceramic	122015-473
C29	Capacitor, .1 µF, 50 V, +80%-20%, Cera.	122002-104
C30	Capacitor, 100 µF, 16 V, Electrolytic, Axial	124008-107
C31-C34	Capacitor, .047 µF, 50 V, ±10%, Ceramic	122015-473
C35	Capacitor, 100 µF, 16 V, Electrolytic, Axial	124008-107
C36-C38	Capacitor, .22 µF, 50 V, ±10%, Ceramic	122015-224
C39	Capacitor, .1 µF, 50 V, +80%-20%, Cera.	122002-104
C40	Capacitor, 100 µF, 25 V, Electrolytic	124009-107
C41-C43	Capacitor, 1000 µF, 25 V, Electrolytic, Rad	123024-108
C44	Capacitor, .1 µF, 50 V, +80%-20%, Cera.	122002-104
C45-C47	Capacitor, .22 µF, 50 V, ±10%, Ceramic	122015-224
C48	Capacitor, 1000 µF, 25 V, Electrolytic, Rad	123024-108
C49	Capacitor, .1 µF, 50 V, +80%-20%, Cera.	122002-104
C50	Capacitor, 100 µF, 25 V, Electrolytic	124009-107
C51-C53	Capacitor, 1000 µF, 25 V, Electrolytic, Rad	123024-108
C54-C57	Capacitor, .047 µF, 50 V, ±10%, Ceramic	122015-473
C58-C61	Capacitor, .22 µF, 50 V, ±10%, Ceramic	122015-224
C62	Capacitor, 100 µF, 25 V, Electrolytic	124009-107
C63-C66	Capacitor, 1000 µF, 25 V, Electrolytic, Rad	123024-108
HS1-HS3	Heat Sink, Alum, 2X2X1, 2X4-40	178378-001
IC1-IC3	Integrated Circuit, Quad Op-Amp, LM3403	137673-001
IC4-IC6	Integrated Circuit, TDA1554	137733-001

Designator	Description	Part No.
JCHIN1, JCHIN2	Connector, 11 Ckt, Hdr, .100 Ctr, Key 5	179118-011
JPWR	Connector, 9 Ckt, Header, .156 Ctr, Key 3	179213-009
JSPKR1, 2	Connector, 11 Ckt, Hdr, .100 Ctr, Key 3	179118-011
L1	Inductor, Ferrite Bead, N12N	141003-005
Q1	Integrated Circuit, 78L05	137258-001
R1	Resistor, 150 K Ω, ±5%, 1/4 W	110000-154
R2	Resistor, 22.6 K Ω, ±1%, 1/4 W	110034-2262
R3	Resistor, 11.0 K Ω, ±1%, 1/4 W	110034-1102
R4, R5	Resistor, 45.3 K Ω, ±1%, 1/4 W	110034-4532
R6	Resistor, 11.0 K Ω, ±1%, 1/4 W	110034-1102
R7	Resistor, 22.6 K Ω, ±1%, 1/4 W	110034-2262
R8	Resistor, 150 K Ω, ±5%, 1/4 W	110000-154
R9-R12	Resistor, 158 K Ω, ±1%, 1/4 W	110034-1583
R13-R15	Resistor, 22.6 K Ω, ±1%, 1/4 W	110034-2262
R16, R17	Resistor, 45.3 K Ω, ±1%, 1/4 W	110034-4532
R18	Resistor, 0 Ω, ±5%, 1/4 W	110005-001
R19	Resistor, 150 K Ω, ±5%, 1/4 W	110000-154
R20	Resistor, 22.6 K Ω, ±1%, 1/4 W	110034-2262
R21	Resistor, 11.0 K Ω, ±1%, 1/4 W	110034-1102
R22, R23	Resistor, 45.3 K Ω, ±1%, 1/4 W	110034-4532
R24	Resistor, 11.0 K Ω, ±1%, 1/4 W	110034-1102
R25	Resistor, 22.6 K Ω, ±1%, 1/4 W	110034-2262
R26	Resistor, 150 K Ω, ±5%, 1/4 W	110000-154
R27-R30	Resistor, 158 K Ω, ±1%, 1/4 W	110034-1583
R31-R33	Resistor, 22.6 K Ω, ±1%, 1/4 W	110034-2262
R34, R35	Resistor, 45.3 K Ω, ±1%, 1/4 W	110034-4532
R36	Resistor, 0 Ω, ±5%, 1/4 W	110005-001
R37	Resistor, 11.0 K Ω, ±1%, 1/4 W	110034-1102
R38, R39	Resistor, 45.3 K Ω, ±1%, 1/4 W	110034-4532
R40, R41	Resistor, 11.0 K Ω, ±1%, 1/4 W	110034-1102
R42, R43	Resistor, 45.3 K Ω, ±1%, 1/4 W	110034-4532
R44	Resistor, 11.0 K Ω, ±1%, 1/4 W	110034-1102
R51-R54	Resistor, 22.6 K Ω, ±1%, 1/4 W	110034-2262
R56, R58, R60, R62	Resistor, 150 K Ω, ±5%, 1/4 W	110000-154
(HS1-HS3)	Compound, Thermal	107031-001

NOTES

CHAPTER 5

Schematic Diagrams

INTRODUCTION

THIS CHAPTER contains the schematic diagrams for most of the T-MEK™ game printed-circuit boards, including the game PCB (also called the GT board), the XIO PCB, the Quad Amp PCB, and the Power Distribution PCB. In addition, this chapter includes wiring diagrams for the entire game and the coin door. The PCB *assembly drawings* are illustrated in Chapter 4, Parts Illustrations.

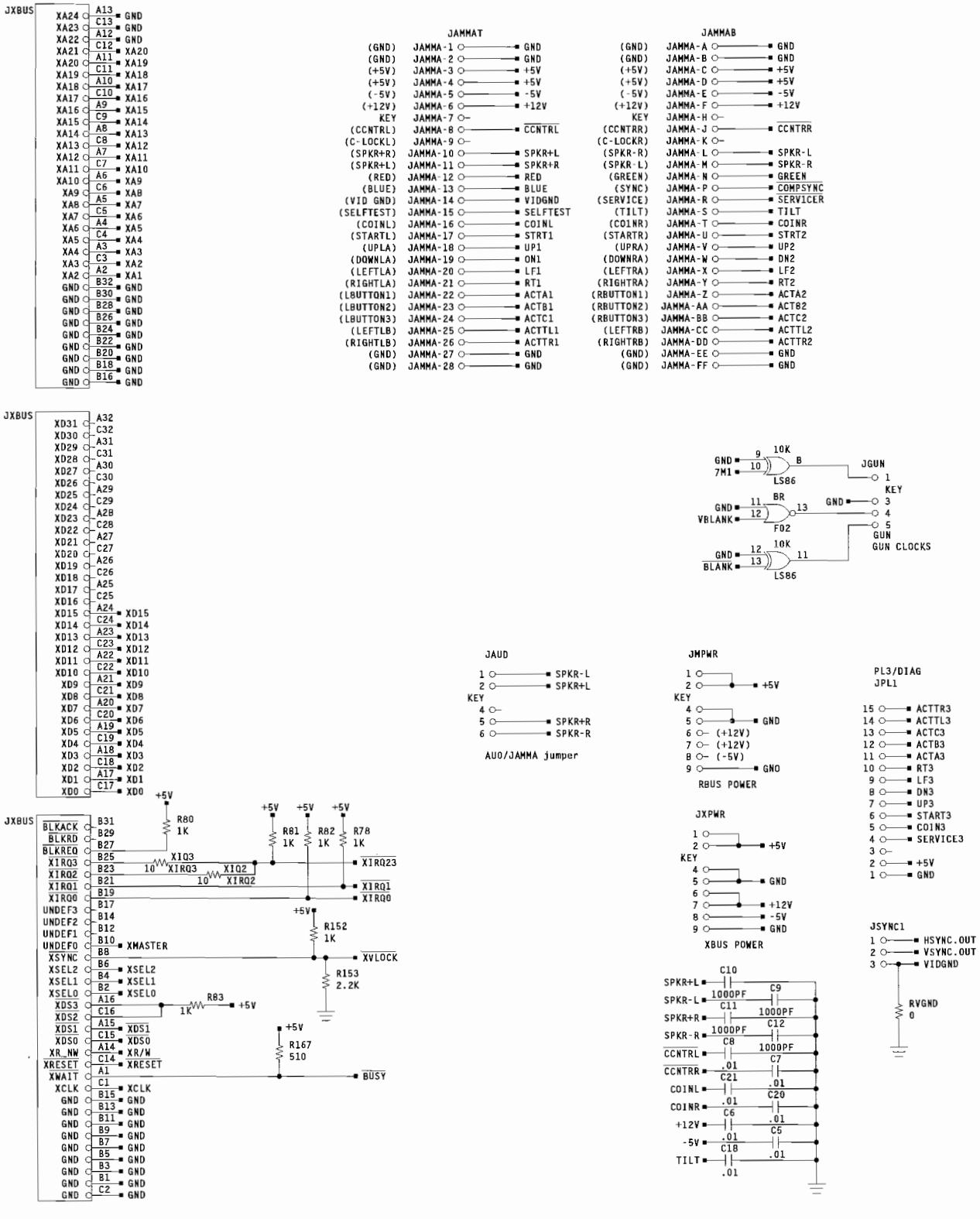


Figure 5-1 T-MEK Game (GT) PCB Assembly Schematic Diagram

051511-01 Rev. D (Sheet 1)

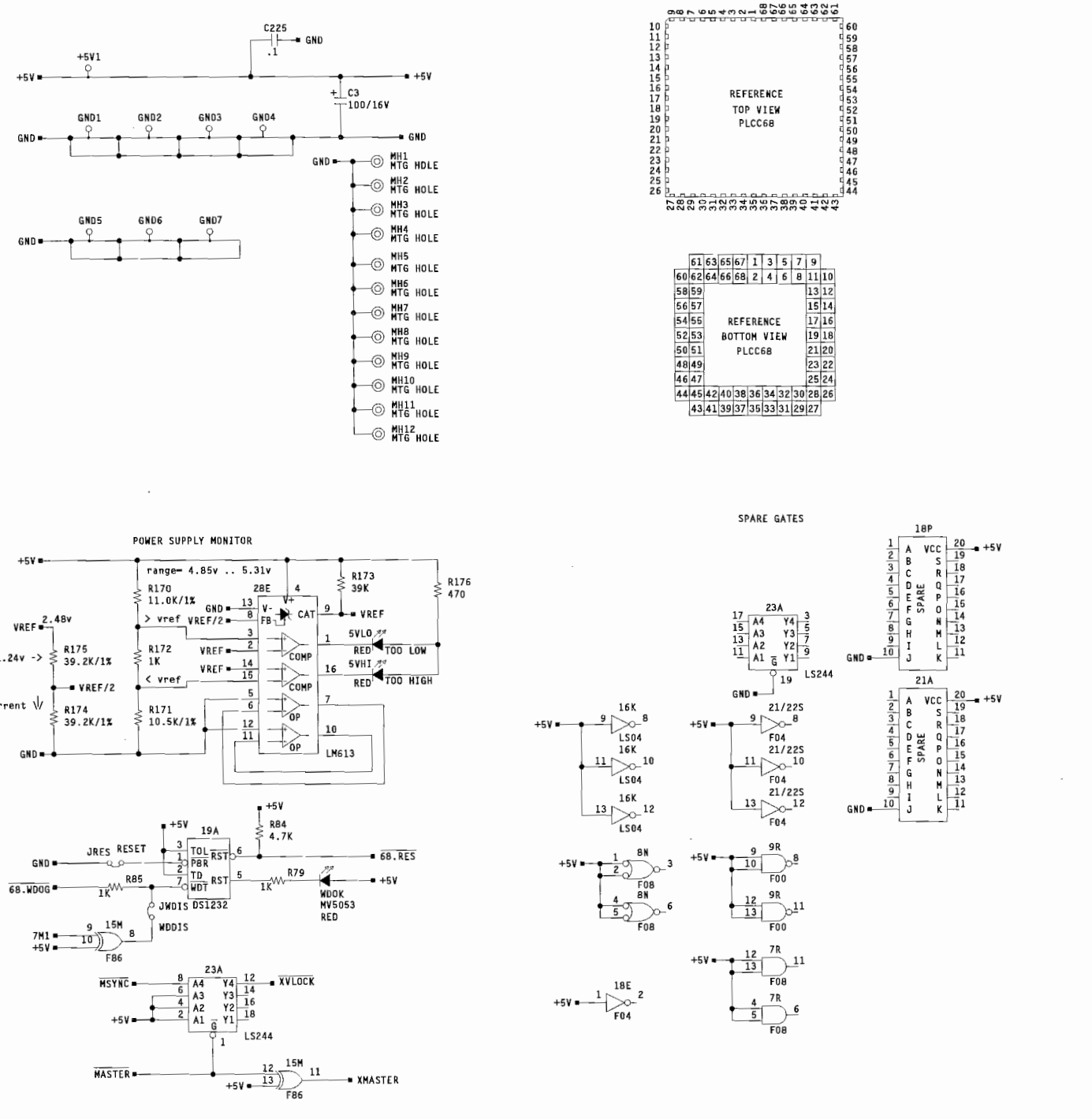


Figure 5-1 T-MEK Game (GT) PCB Assembly Schematic Diagram, Continued

051511-01 Rev. D (Sheet 1)

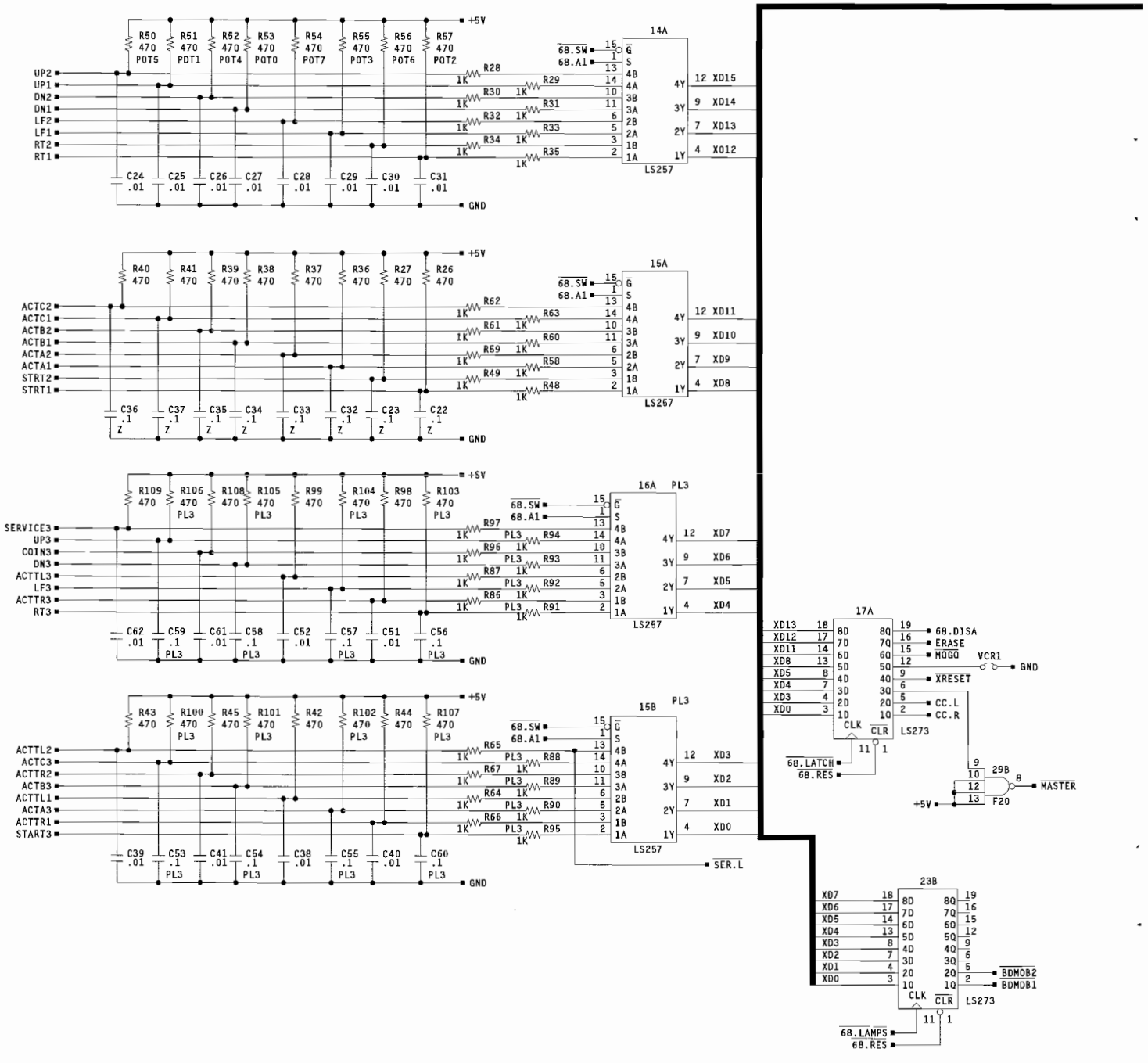


Figure 5-1 T-MEK Game (GT) PCB Assembly Schematic Diagram

051511-01 Rev. D (Sheet 9)

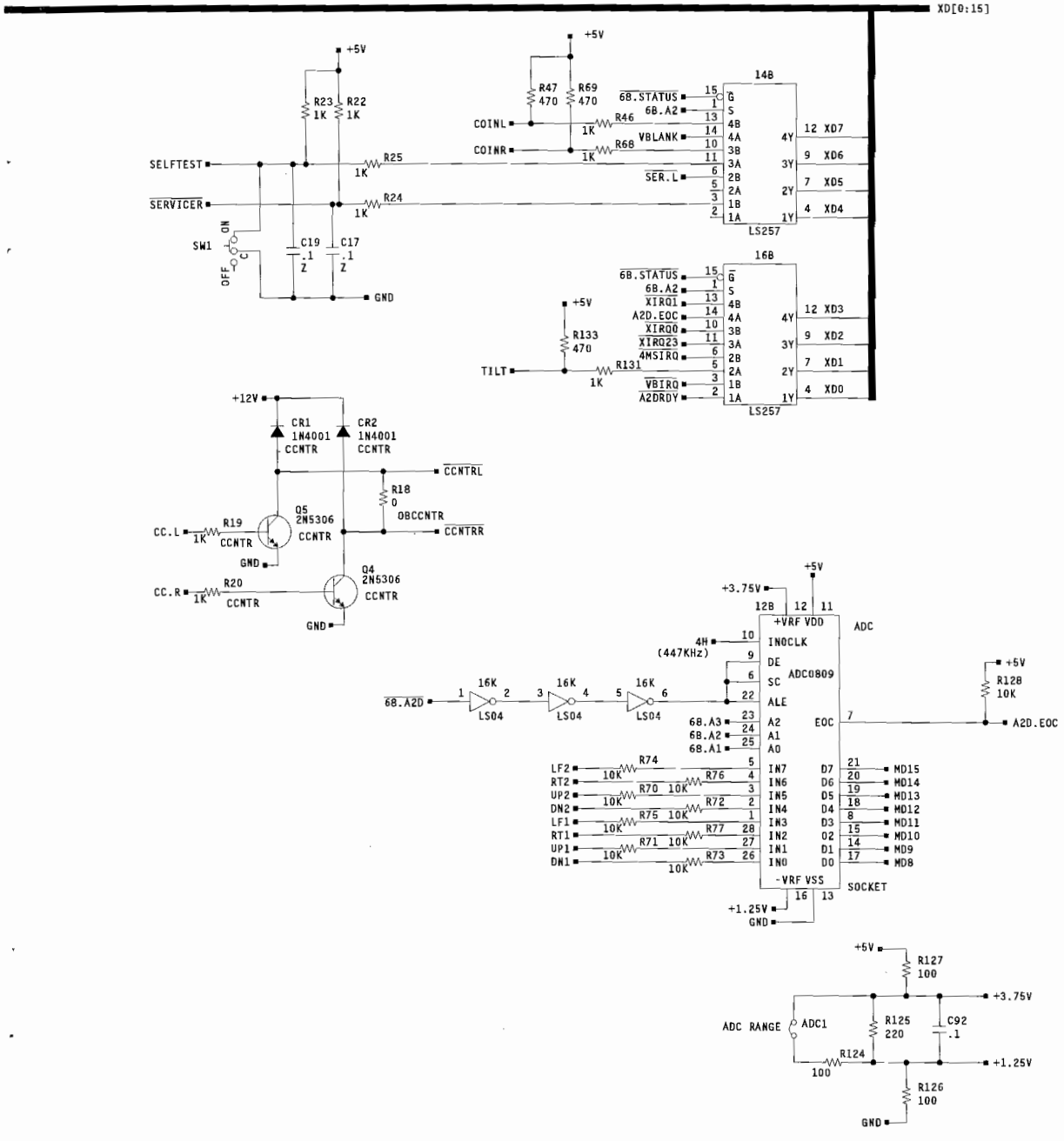


Figure 5-1 T-MEK Game (GT) PCB Assembly Schematic Diagram, Continued

051511-01 Rev. D (Sheet 9)

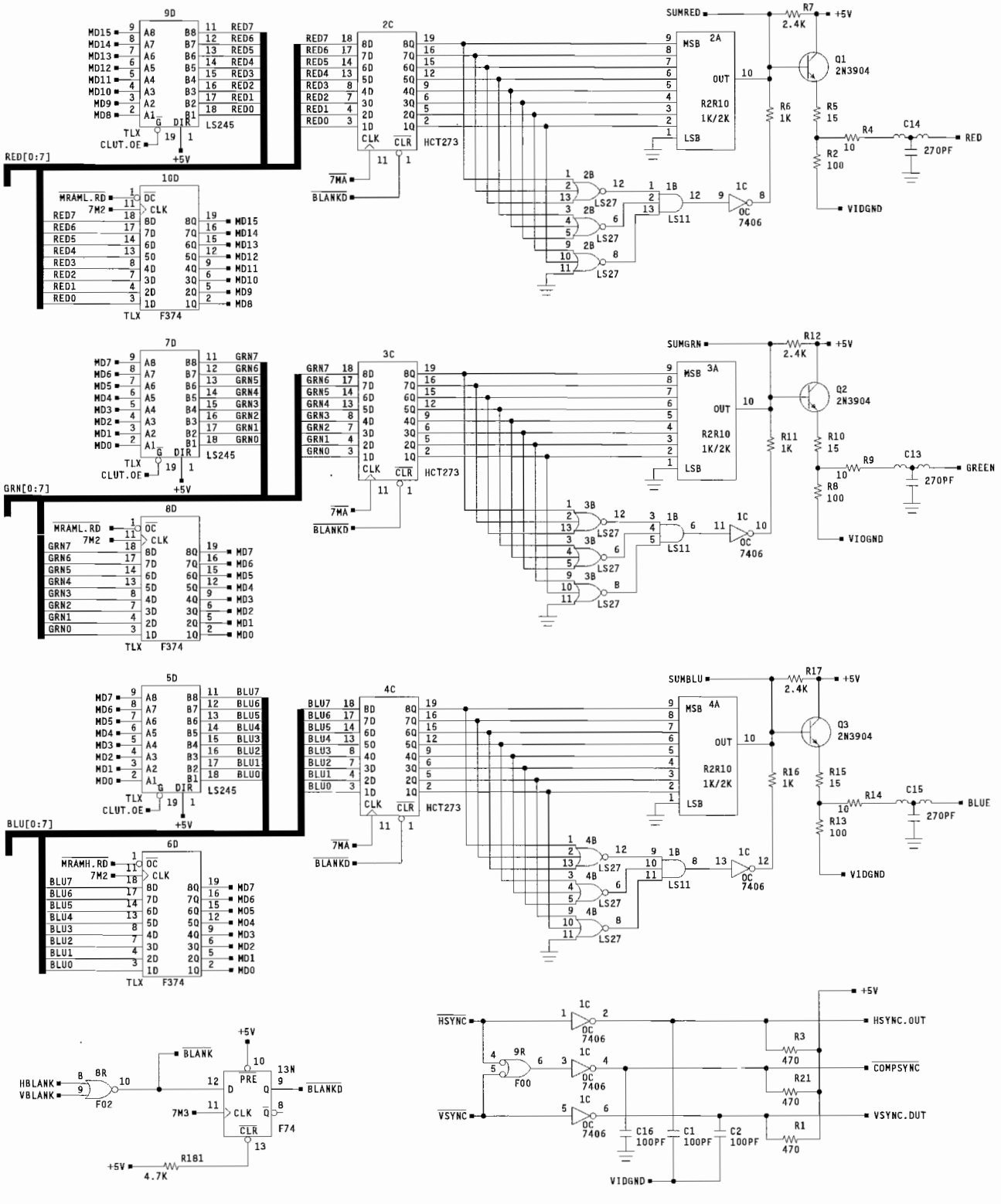


Figure 5-1 T-MEK Game (GT) PCB Assembly Schematic Diagram

051511-01 Rev. D (Sheet 15)

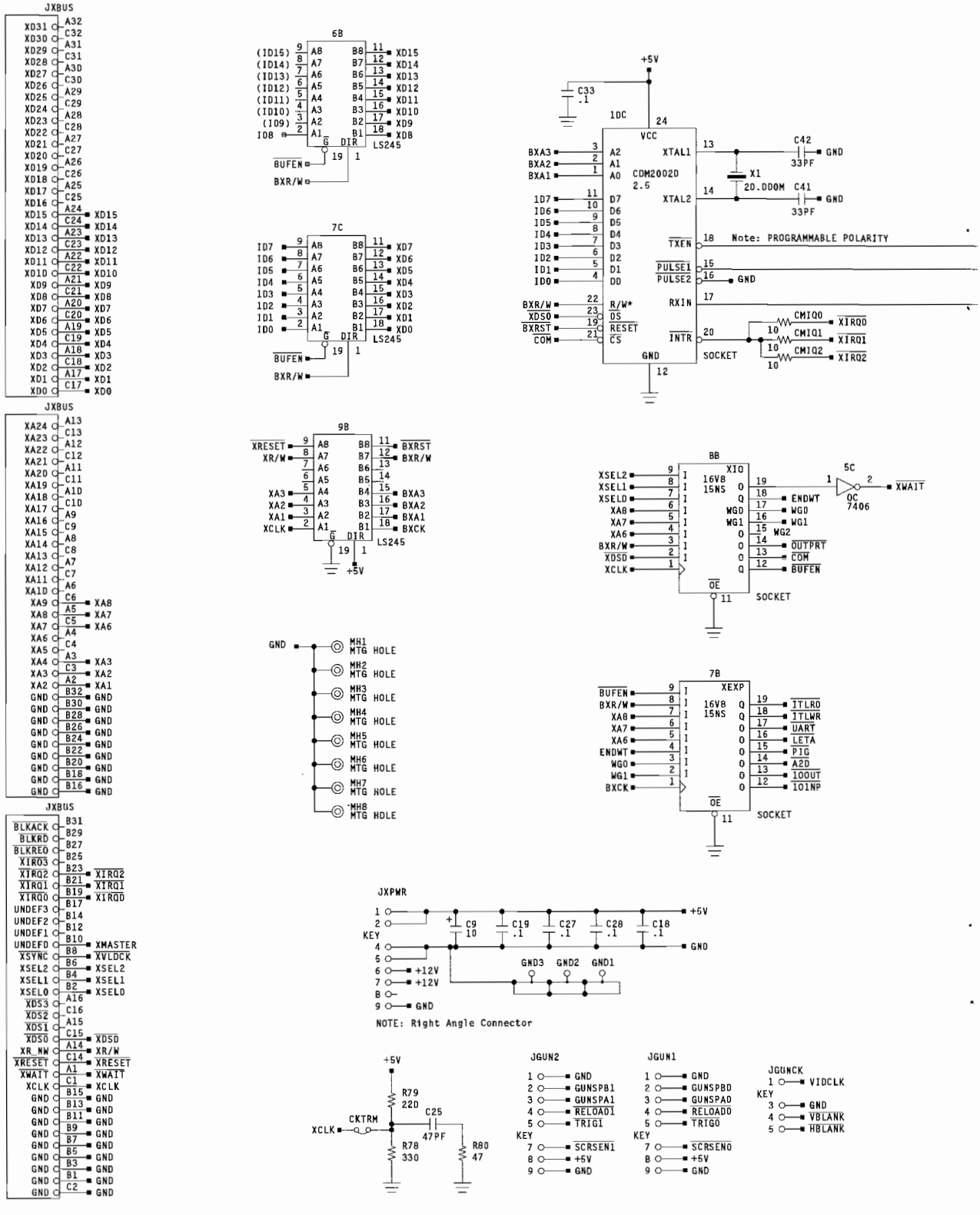


Figure 5-2 XIO PCB Assembly Schematic Diagram

052966-01 Rev. A (Sheet 1)

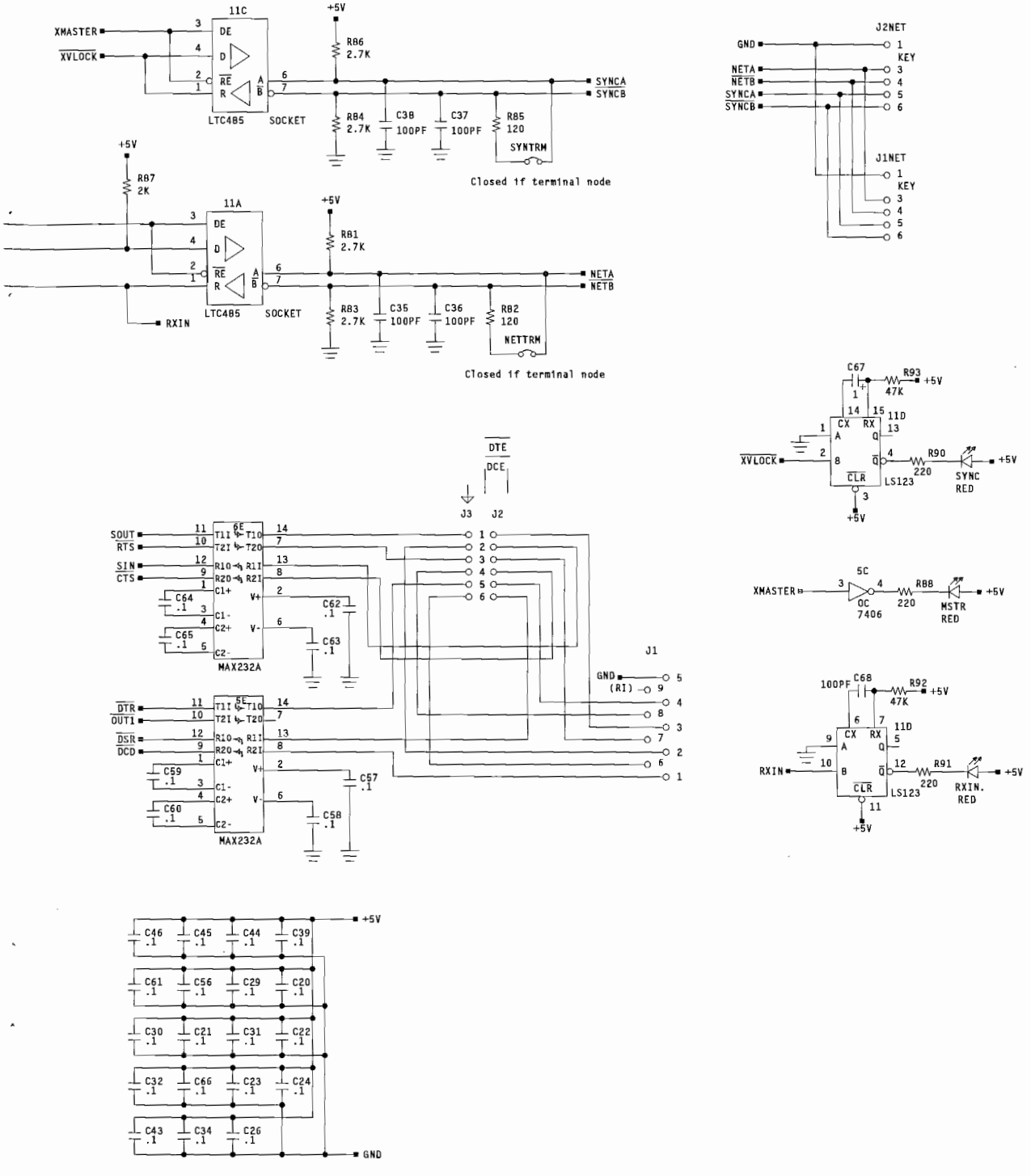


Figure 5-2 XIO PCB Assembly Schematic Diagram, Continued

052966-01 Rev. A (Sheet 1)

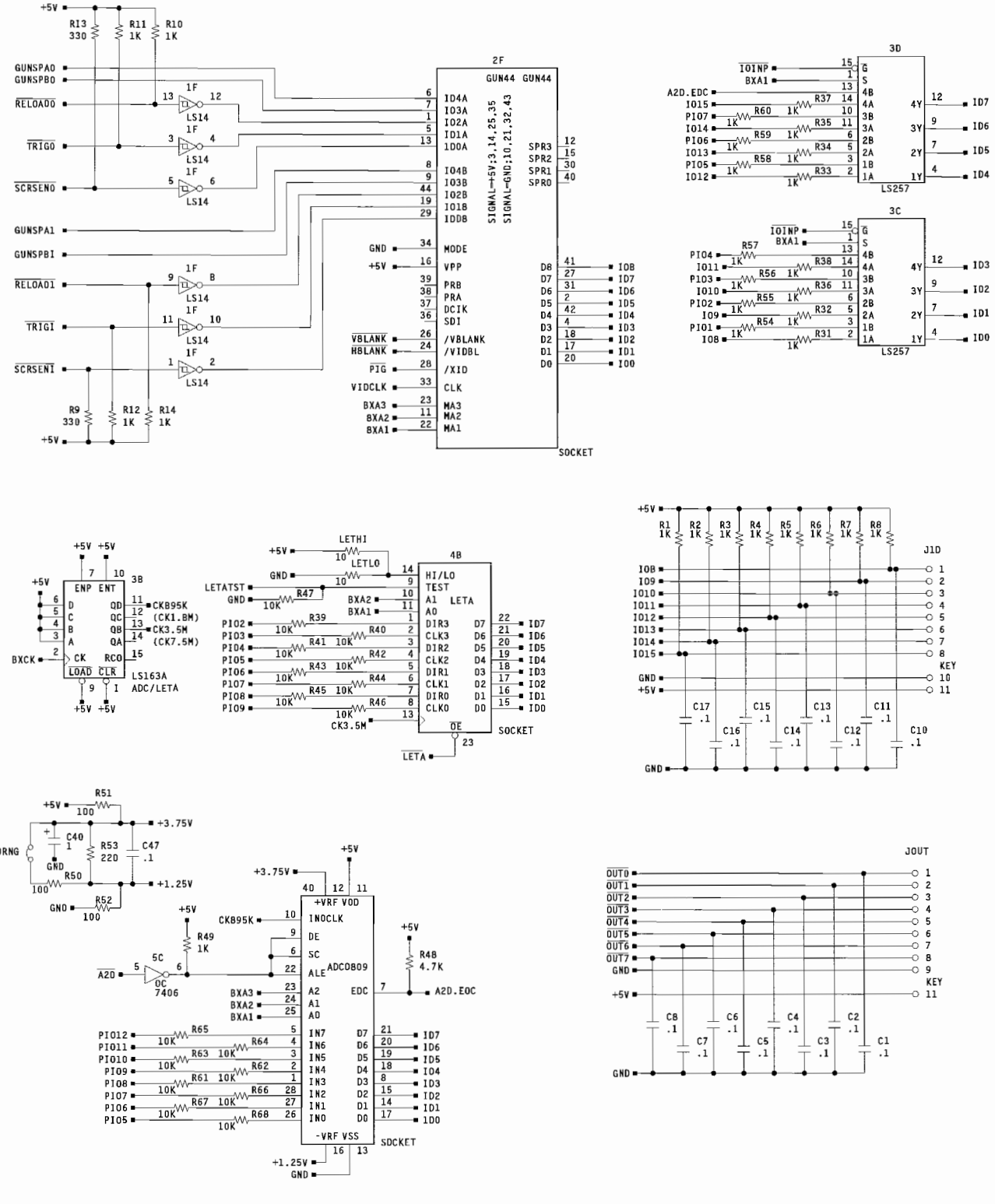


Figure 5-2 XIO PCB Assembly Schematic Diagram

052966-01 Rev. A (Sheet 2)

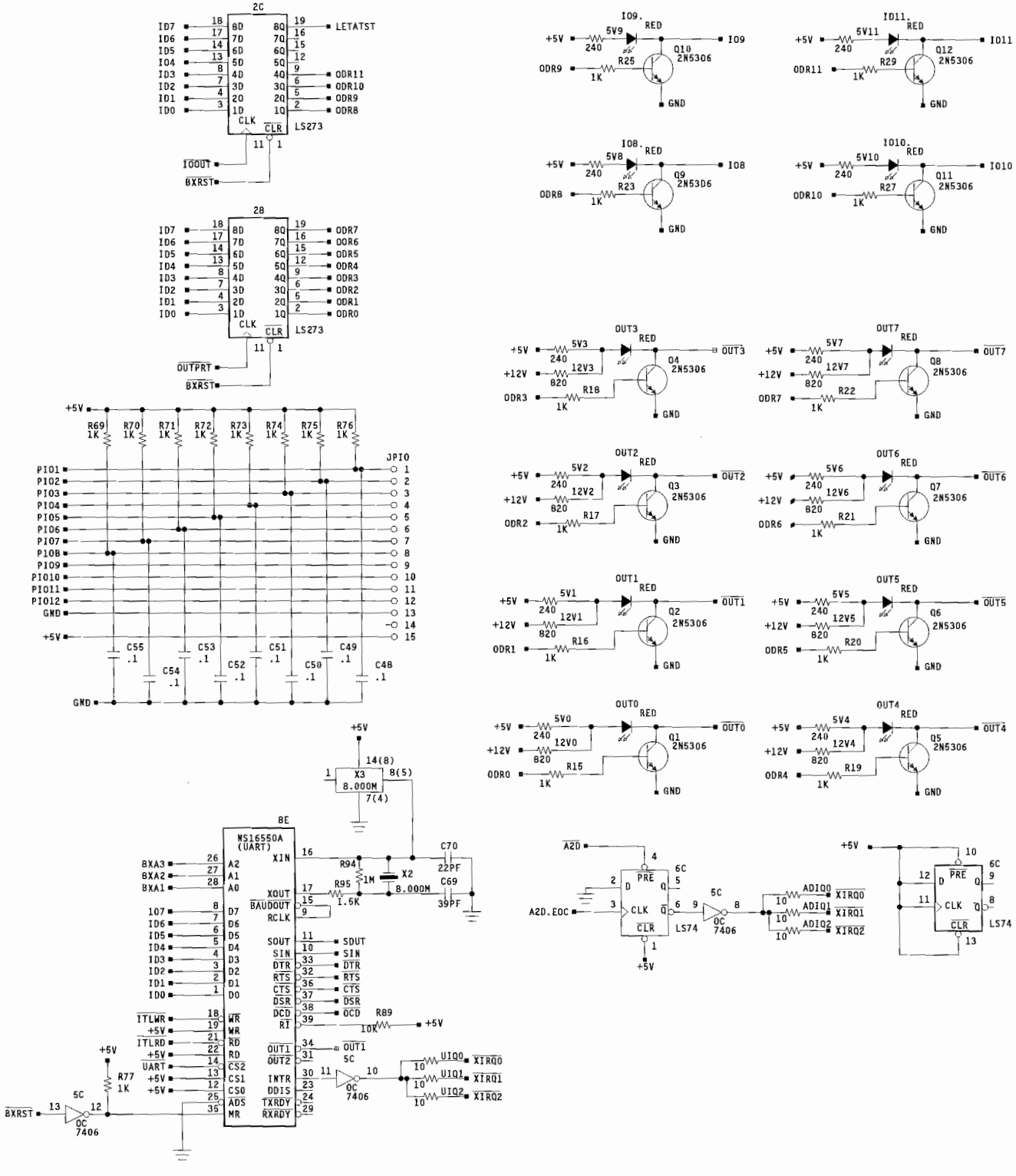


Figure 5-2 XIO PCB Assembly Schematic Diagram, Continued

052966-01 Rev. A (Sheet 2)

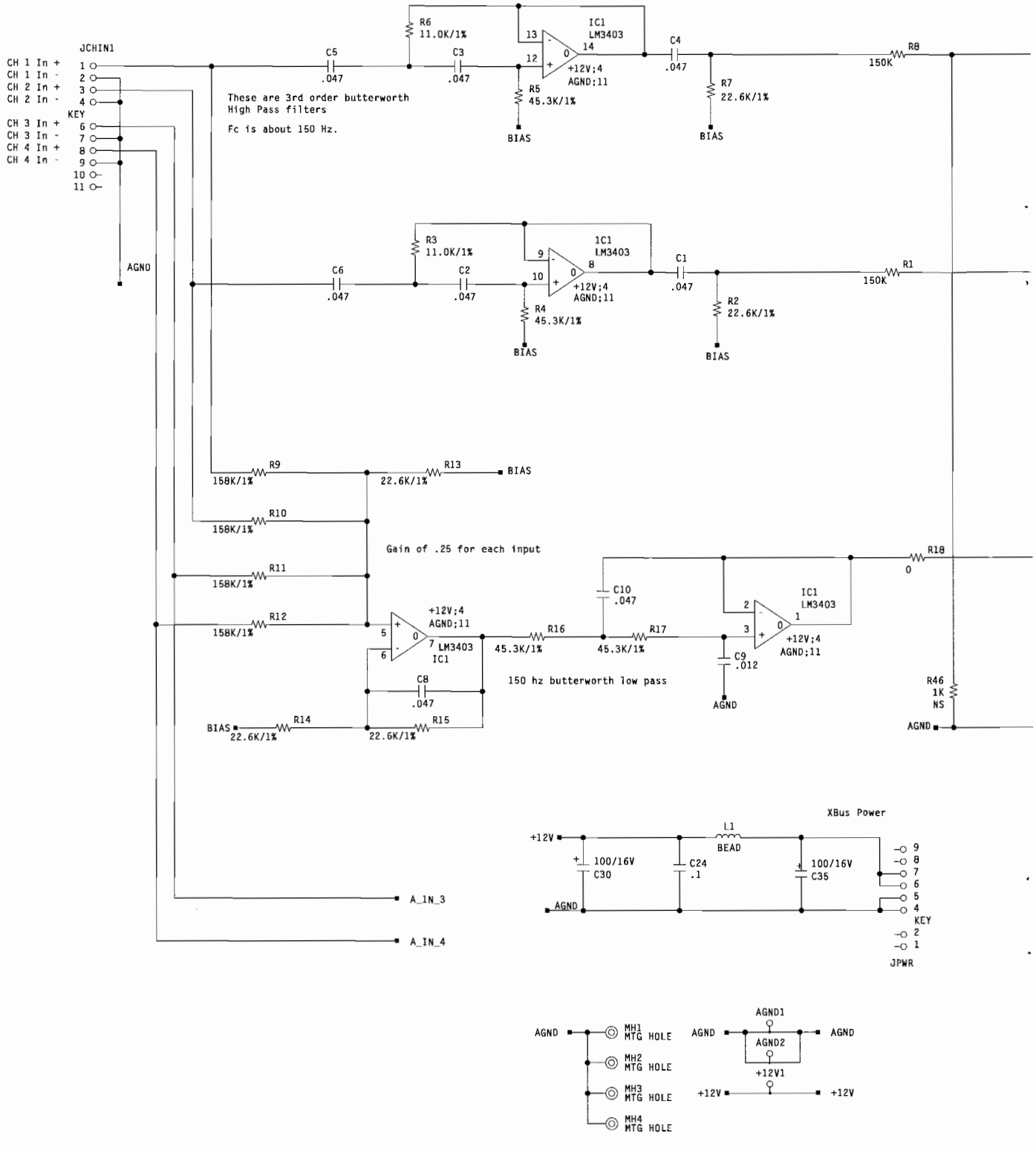


Figure 5-3 Quad Amp PCB Assembly Schematic Diagram

052293-01 Rev. B (Sheet 1)

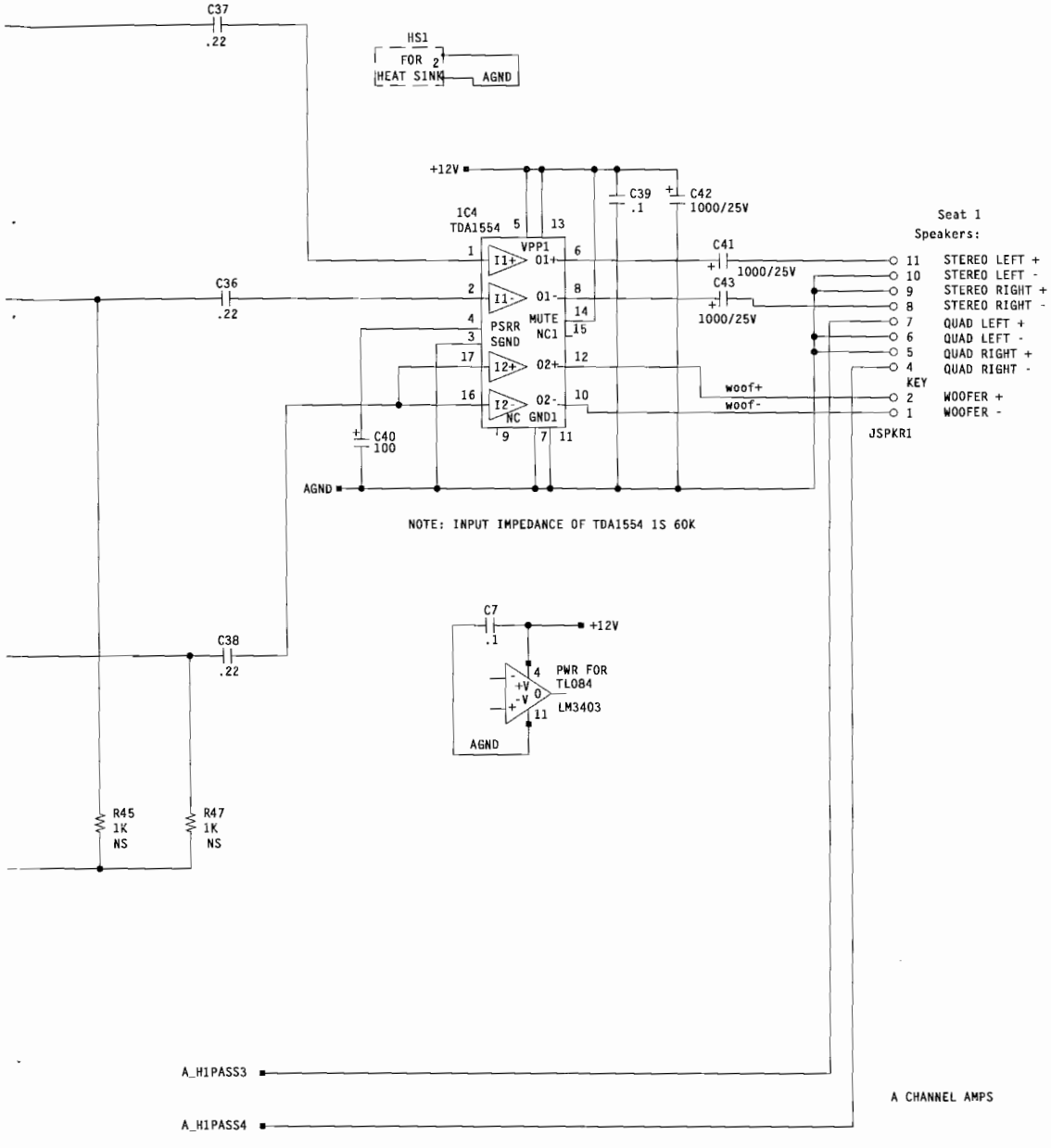


Figure 5-3 Quad Amp PCB Assembly Schematic Diagram, Continued

052293-01 Rev. B (Sheet 1)

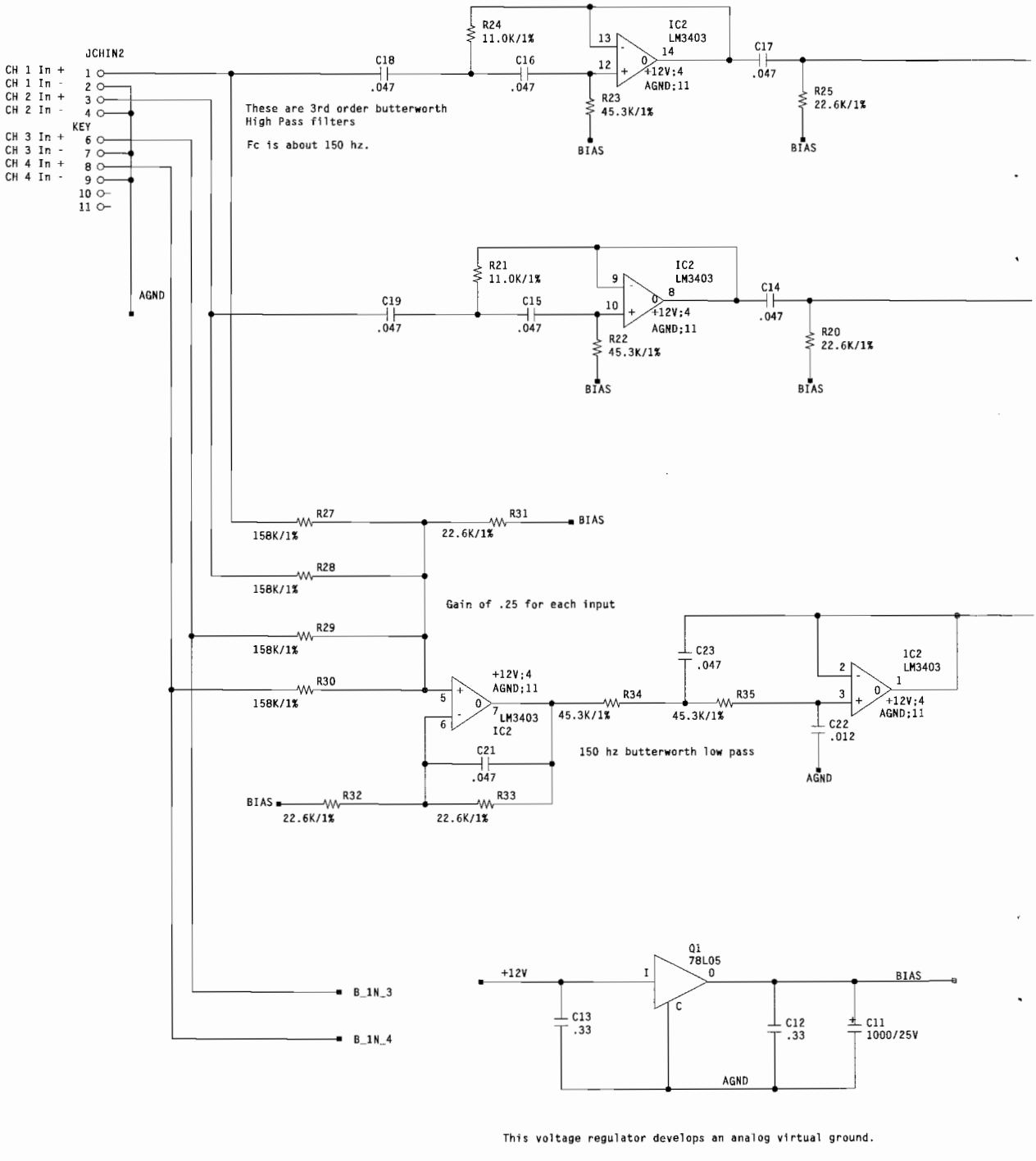


Figure 5-3 Quad Amp PCB Assembly Schematic Diagram

052293-01 Rev. B (Sheet 2)

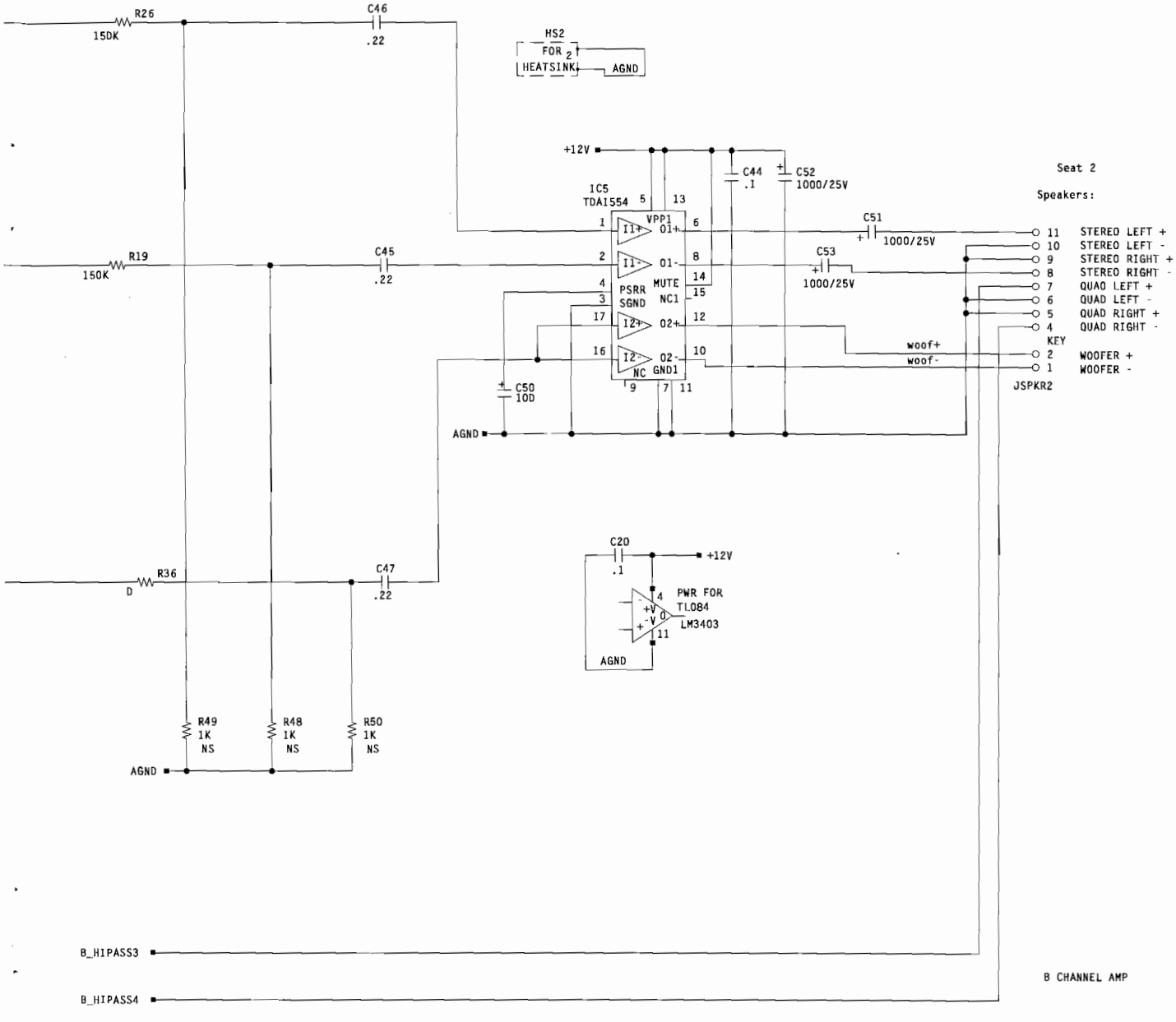


Figure 5-3 Quad Amp PCB Assembly Schematic Diagram, Continued

052293-01 Rev. B (Sheet 2)

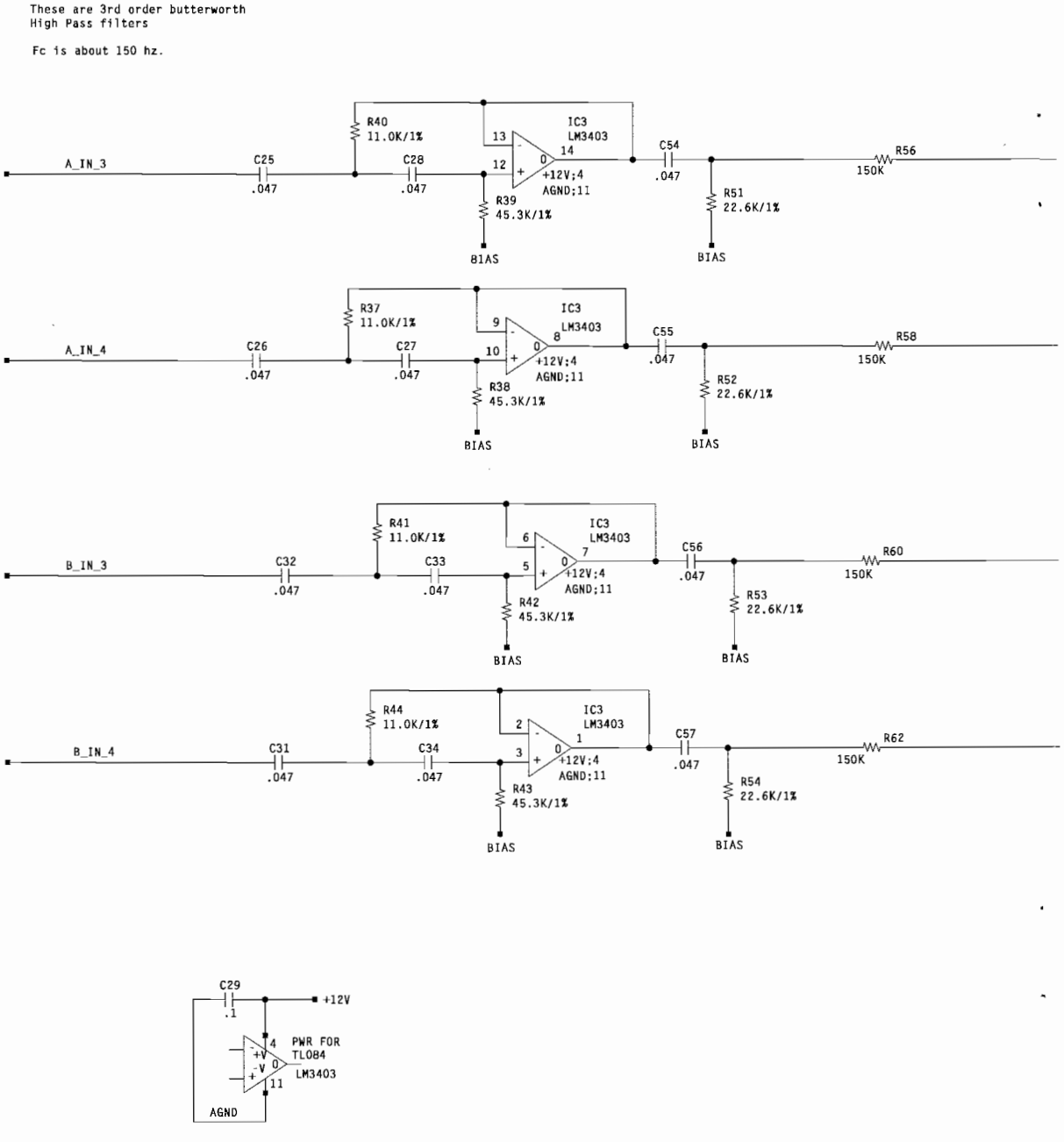


Figure 5-3 Quad Amp PCB Assembly Schematic Diagram

052293-01 Rev. B (Sheet 3)

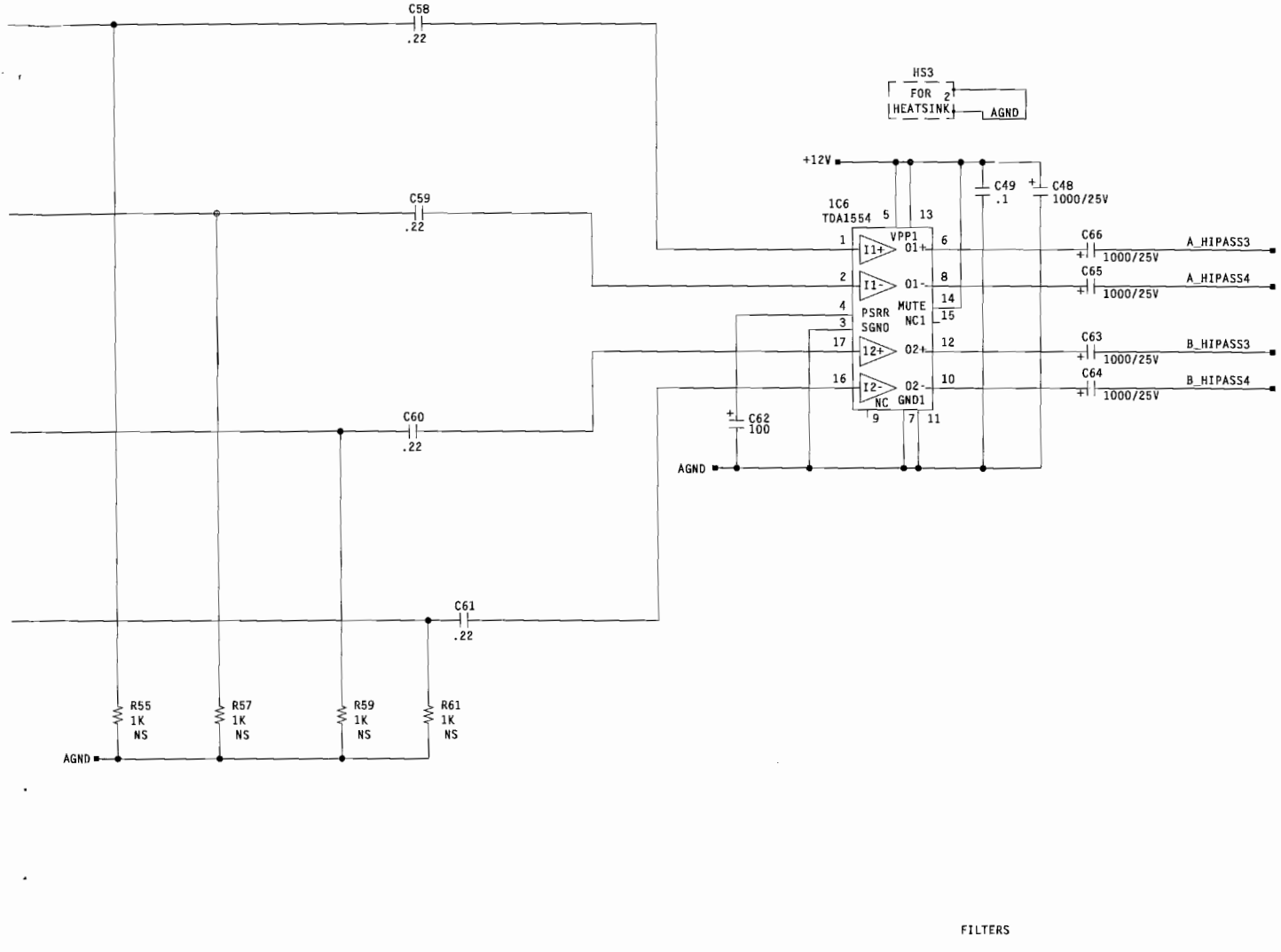


Figure 5-3 Quad Amp PCB Assembly Schematic Diagram, Continued

052293-01 Rev. B (Sheet 3)

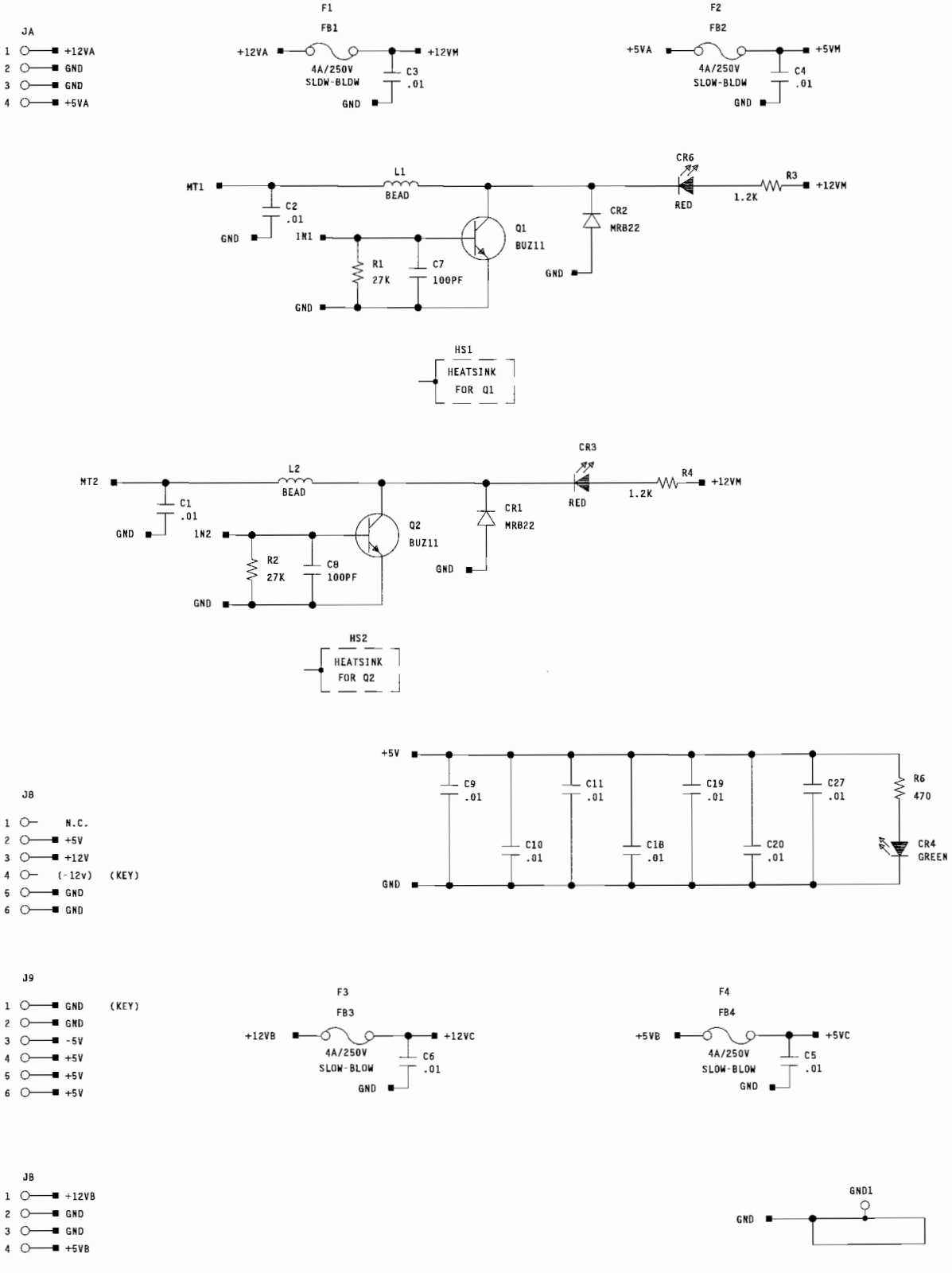


Figure 5-4 Power Distribution PCB Assembly Schematic Diagram

052921-01 Rev. A

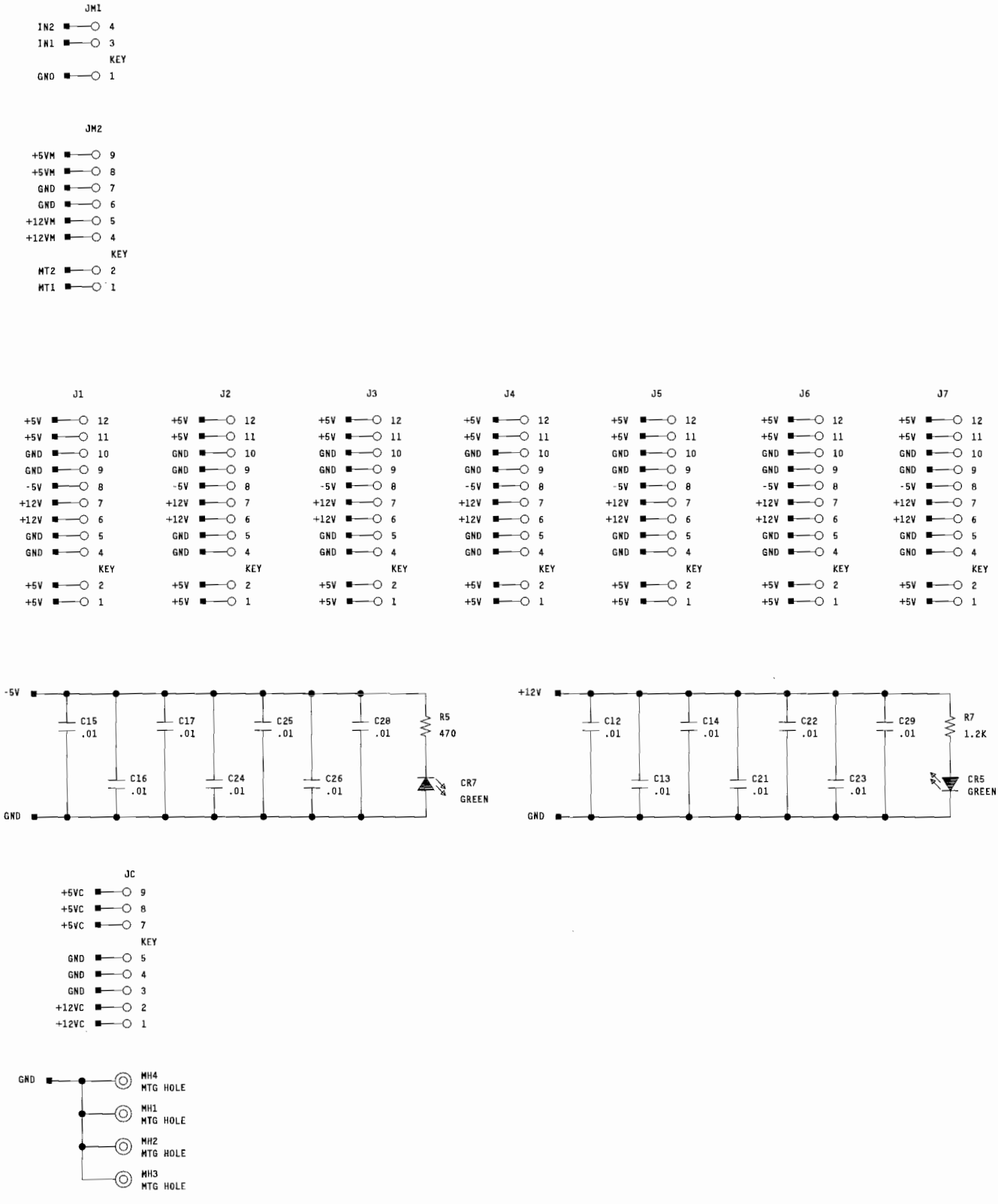


Figure 5-4 Power Distribution PCB Assembly Schematic Diagram, Continued

052921-01 Rev. A

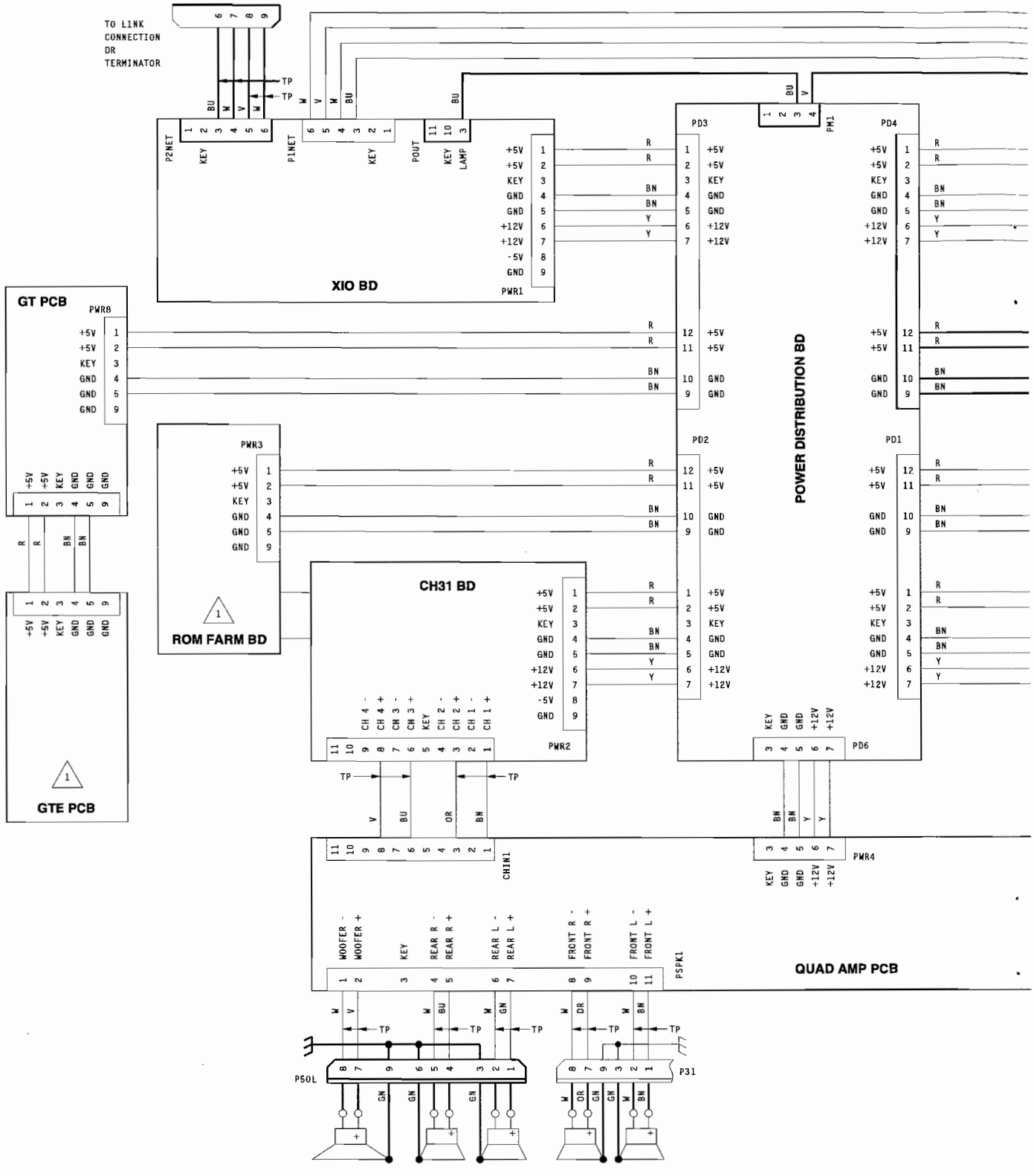


Figure 5-5 T-MEK Game Wiring Diagram

053348-01 Rev. A (Sheet 1)

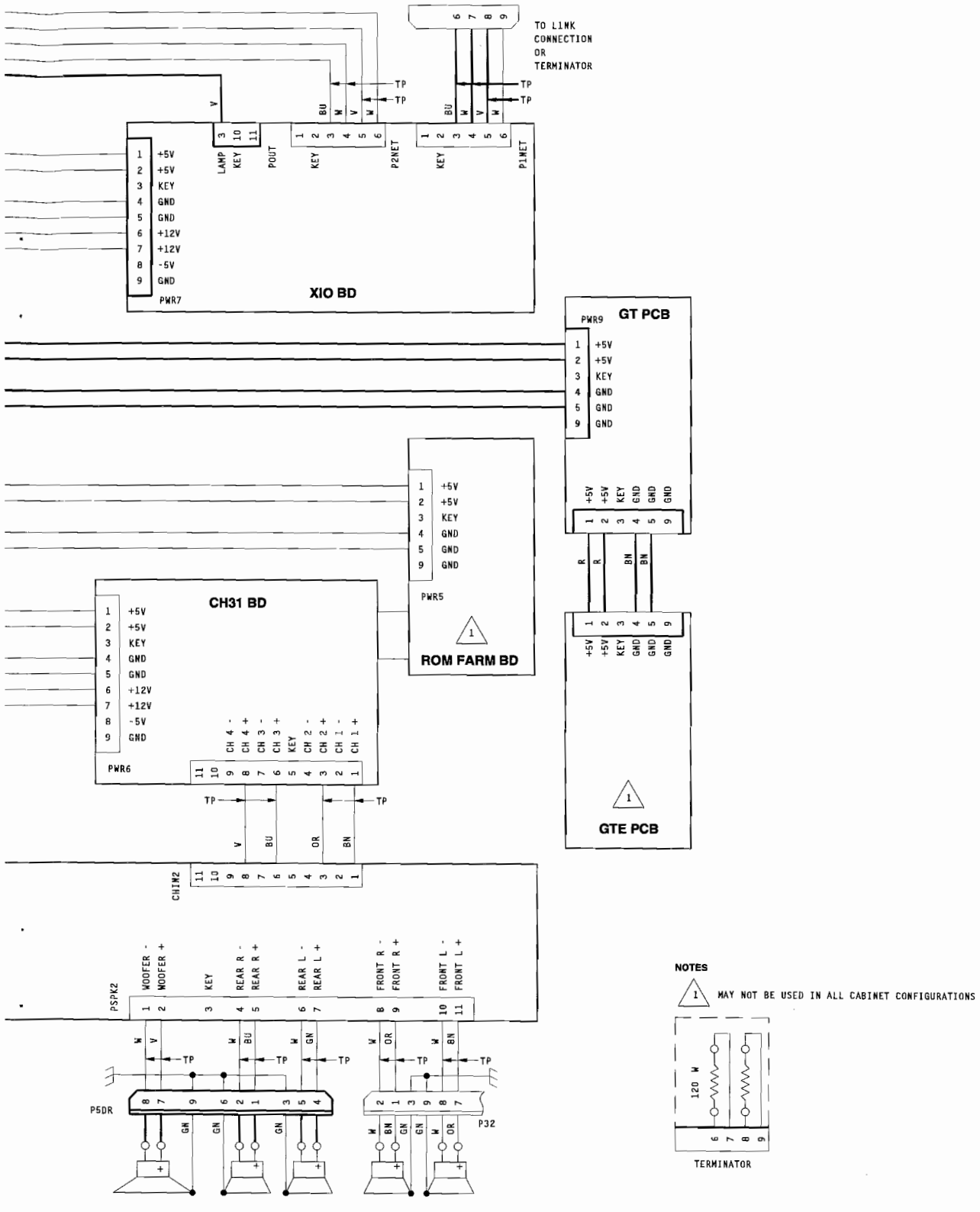


Figure 5-5 T-MEK Game Wiring Diagram, Continued

053348-01 Rev. A (Sheet 1)

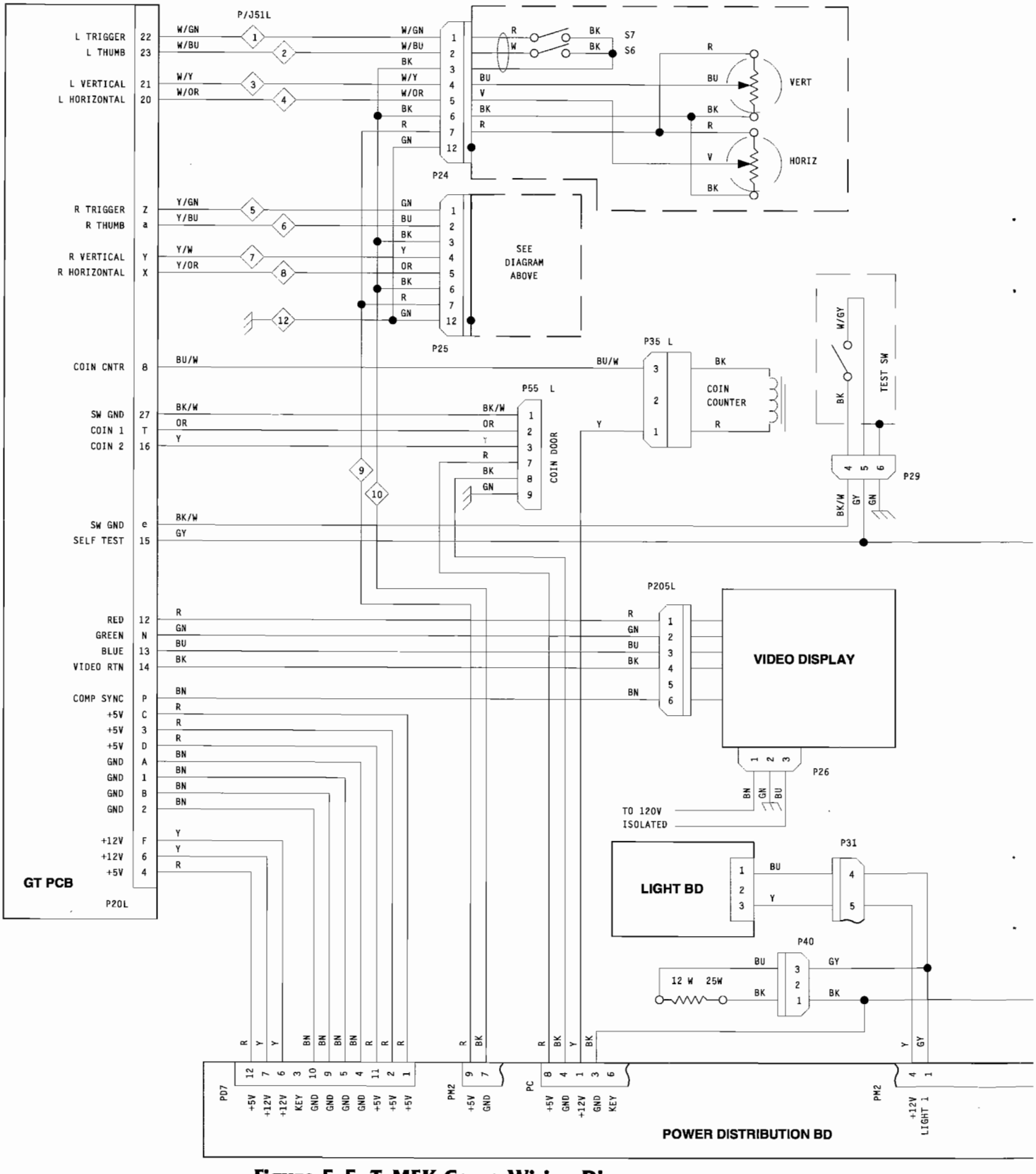


Figure 5-5 T-MEK Game Wiring Diagram

053348-01 Rev. A (Sheet 2)

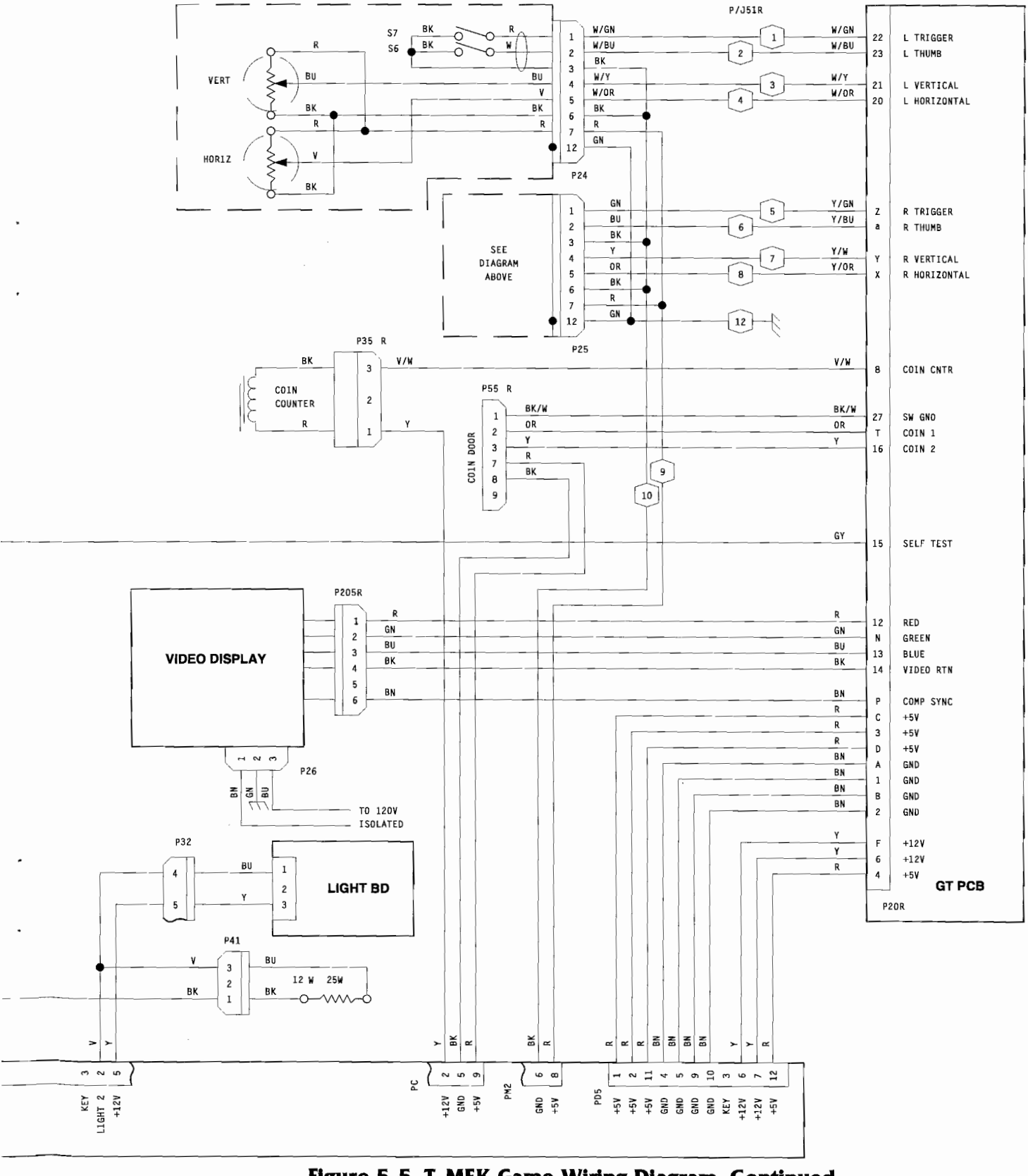


Figure 5-5 T-MEK Game Wiring Diagram, Continued

053348-01 Rev. A (Sheet 2)

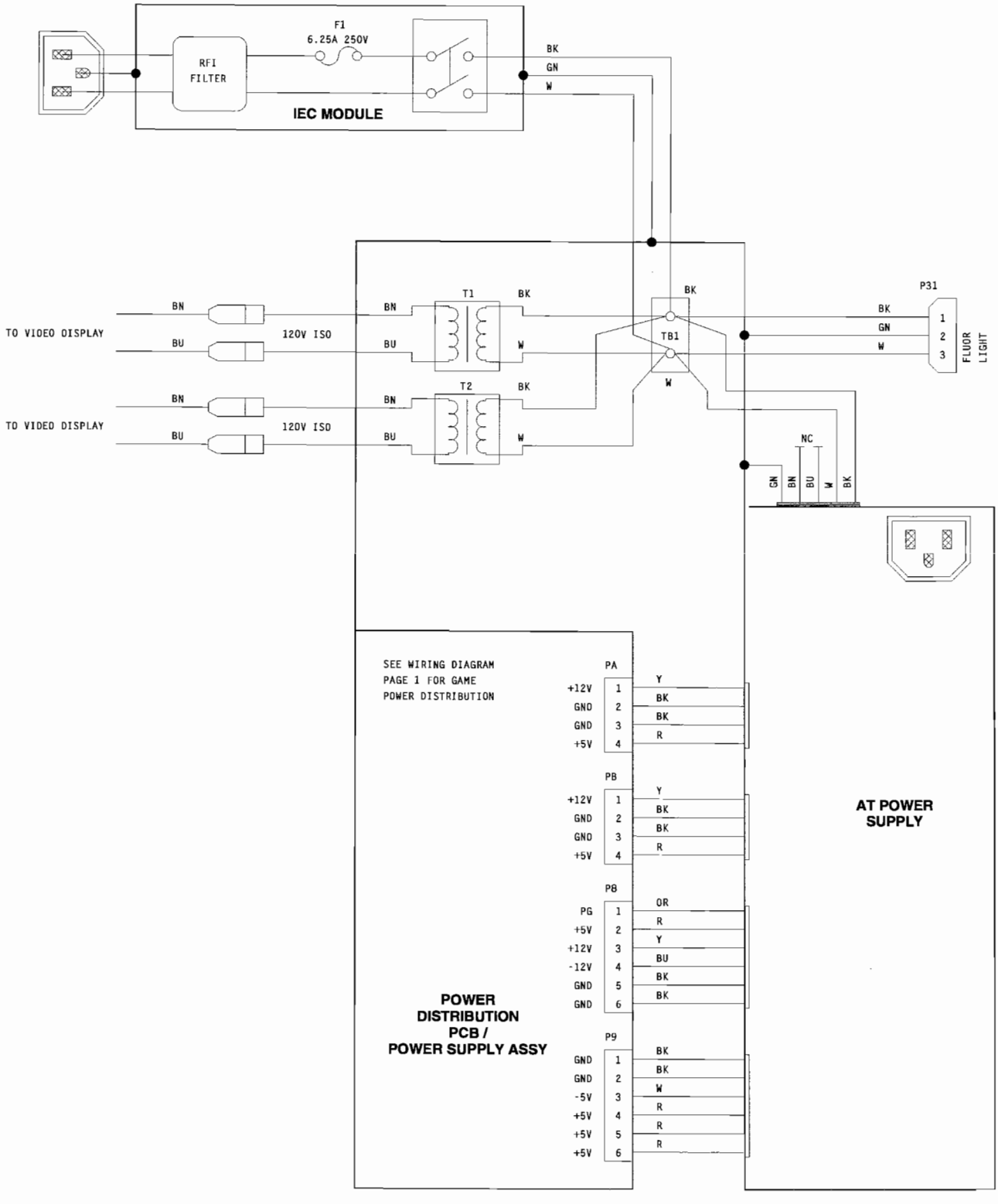


Figure 5-5 T-MEK Game Wiring Diagram

053348-01 Rev. A (Sheet 3)

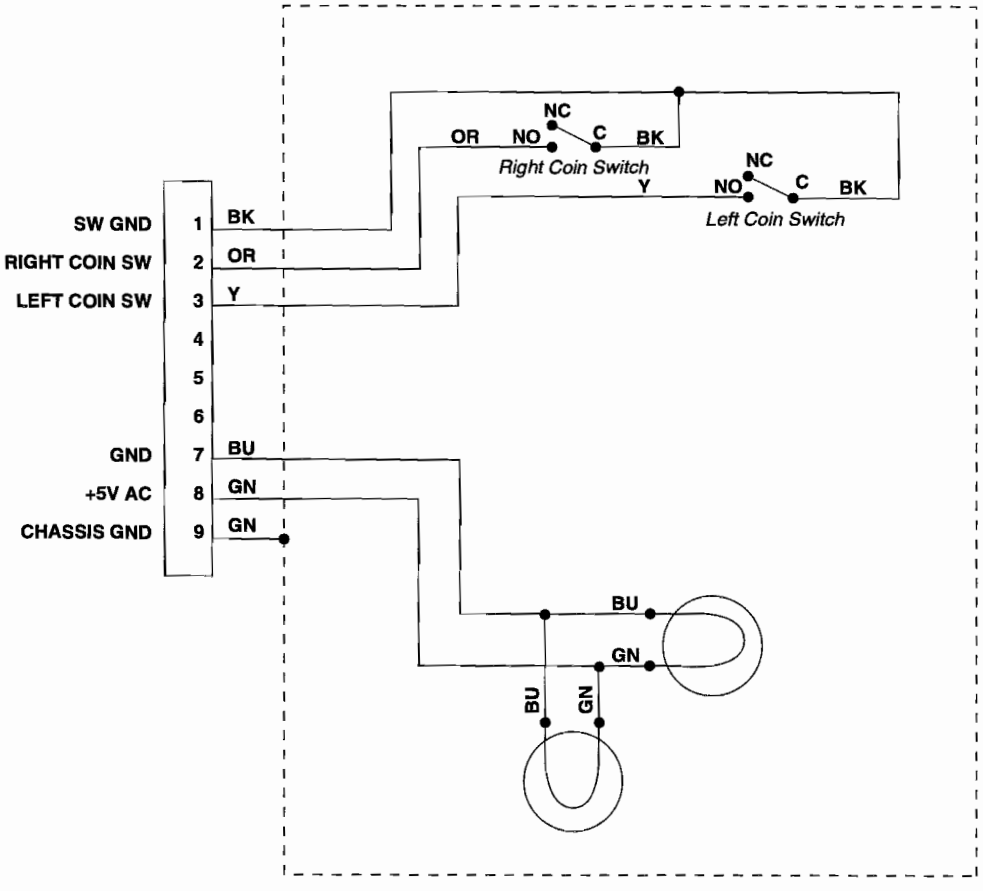


Figure 5-6 Coin Door Wiring Diagram

049507-01 Rev. A

NOTES

Warranty

Seller warrants that its printed-circuit boards and parts thereon are free from defects in material and workmanship under normal use and service for a period of ninety (90) days from date of shipment. Seller warrants that its video displays and laser-video disc players (in games supplied with displays and video-disc players) are free from defects in material and workmanship under normal use and service for a period of thirty (30) days from date of shipment. None of the Seller's other products or parts thereof are warranted.

If the products described in this manual fail to conform to this warranty, Seller's sole liability shall be, at its option, to repair, replace, or credit Buyer's account for such products which are returned to Seller during said warranty period, provided:

(a) Seller is promptly notified in writing upon discovery by Buyer that said products are defective;

(b) Such products are returned prepaid to Seller's 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.

In no event shall Seller be liable for loss of profits, loss of use, incidental or consequential damages.

Except for any express warranty set forth in a written contract between Seller and Buyer which contract supersedes the terms herein, this warranty is expressed in lieu of all other warranties expressed or implied, including the implied warranties of merchantability and fitness for a particular purpose, and of all other obligations or liabilities on the Seller's part, and it neither assumes nor authorizes any other person to assume for the Seller any other liabilities in connection with the sale of products by Seller.

The use of any non-Atari parts may void your warranty, according to the terms of the warranty. The use of any non-Atari parts may also adversely affect the safety of your game and cause injury to you and others. Be very cautious in using non-Atari-supplied components with our games, in order to ensure your safety.

Atari distributors are independent, being privately owned and operated. In their judgment they may sell parts or accessories other than Atari parts or accessories. Atari Games Corporation cannot be responsible for the quality, suitability or safety of any non-Atari part or any modification including labor which is performed by such distributor.

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