

ATARI

CX5200TM RETAIL DEMONSTRATOR

FIELD SERVICE MANUAL

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INTRODUCTION

The CX5200 Retail Demonstrator Field Service Manual is a reference guide for you, the service technician. It is designed to enable you to repair and maintain the retail demonstrator. This manual is to be used in conjunction with the CX5200 Field Service Manual (FD100127 Rev. 02).

This manual is organized in eight sections.

- **Theory of Operation** - Overview of how the retail demonstrator works.
- **Schematics & Silkscreens** - Electrical drawings of the retail demonstrator.
- **Testing Procedures** - Procedures for determining if the retail demonstrator is functioning properly.
- **Fault Isolation** - Procedures for determining which assembly in the retail demonstrator is defective.
- **Disassembly/Assembly Procedures** - Procedures for accessing the various assemblies of the retail demonstrator.
- **Repair Procedures** - Procedures to follow once the defective assembly has been determined.
- **Parts List** - Breakdown of part numbers used in the retail demonstrator.
- **Service Bulletins** - Section to be used to hold all Field Change Orders, Upgrade Bulletins and Tech Tips.

SECTION I

THEORY OF OPERATION

Overview

The ATARI CX5200 Retail Demonstrator is a free-standing unit which includes: a built-in television monitor, a shelf which displays the Model 5200 console, a control panel, a roller menu and a cabinet containing the Major Modules which allow for interaction between the game and the player(s).

Figure I-1 is a Functional Block Diagram of the CX5200 Retail Demonstrator.

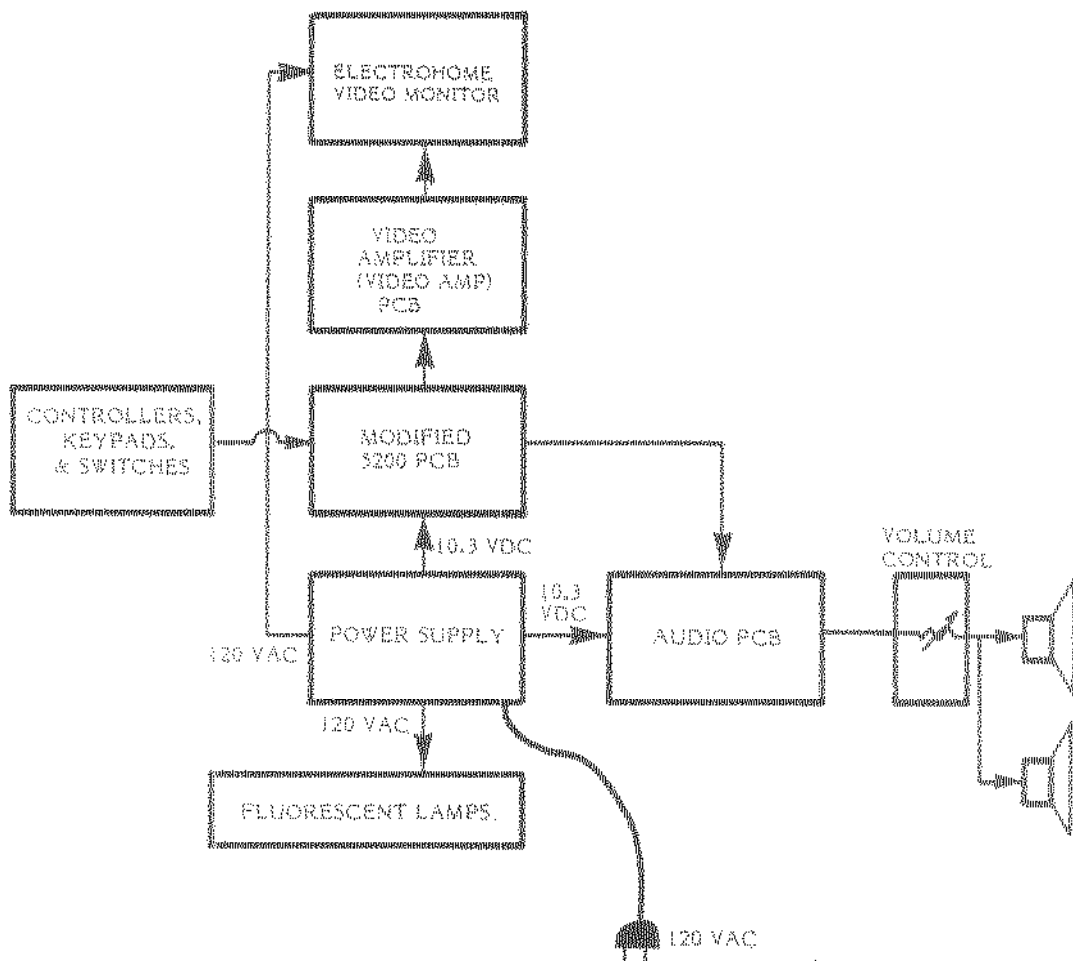


Figure I-1. CX5200 Retail Demonstrator Functional Block Diagram

SECTION 2

SCHEMATICS AND SILKSCREENS

On the following pages are representative silkscreens and schematics for the CX5200 Retail Demonstrator. Minor variations in design may be encountered depending on the production date of the unit, but these schematics provide all details required for an in-depth understanding of all CX5200 Retail Demonstrator units.

NOTE: THE SCHEMATIC FOR THE CX5200 PC BOARD MINUS THE VIDEO AMP BOARD IS IN THE CX5200 FIELD SERVICE MANUAL (PART NUMBER FD100127 REV. 02).

The Audio PC Board is a combination Audio/Regulator Board. Since only the audio portion is used, the regulator portion has been removed from the schematic. When troubleshooting this board pay no attention to components not found on the schematic.

NOTE: THE OUTLINED PORTION OF THE SCHEMATIC IS A STANDBY AUDIO CHANNEL USED DURING TROUBLESHOOTING.

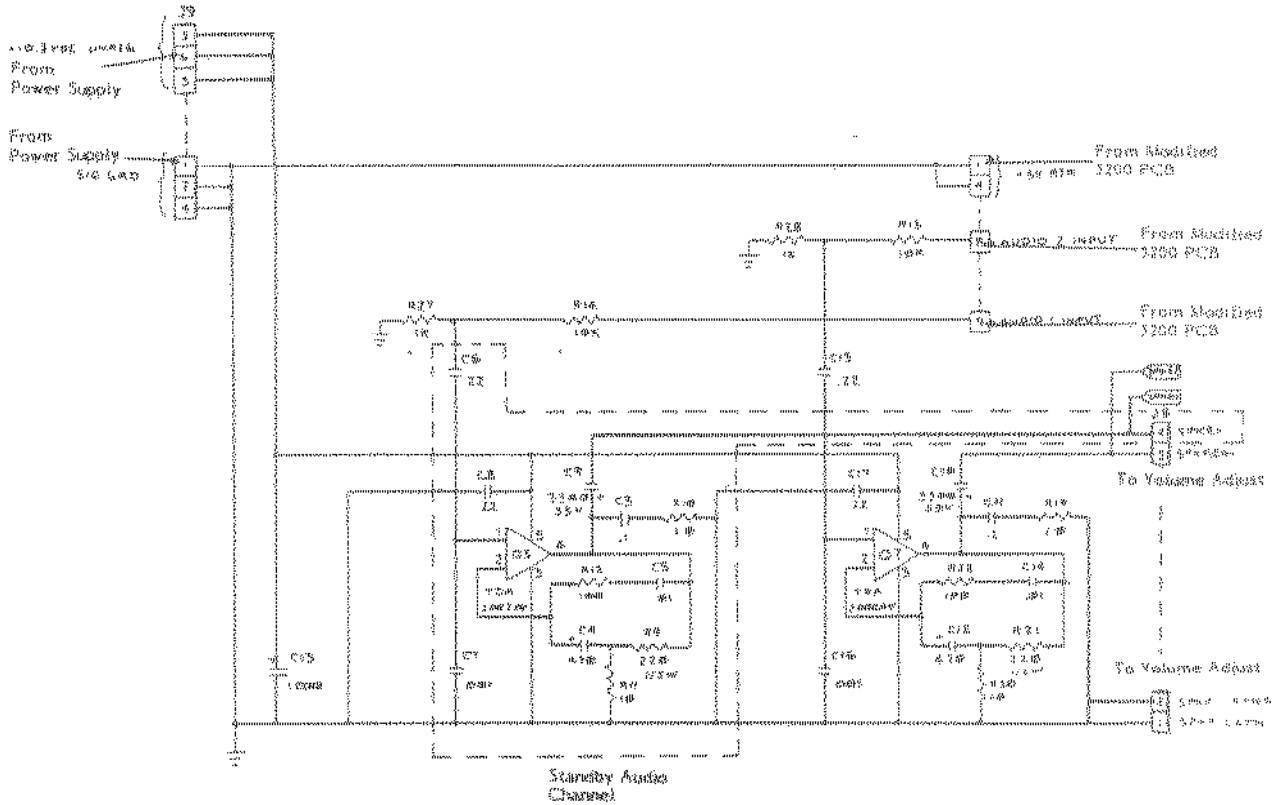


Figure 2-2. Audio PC Board Schematic

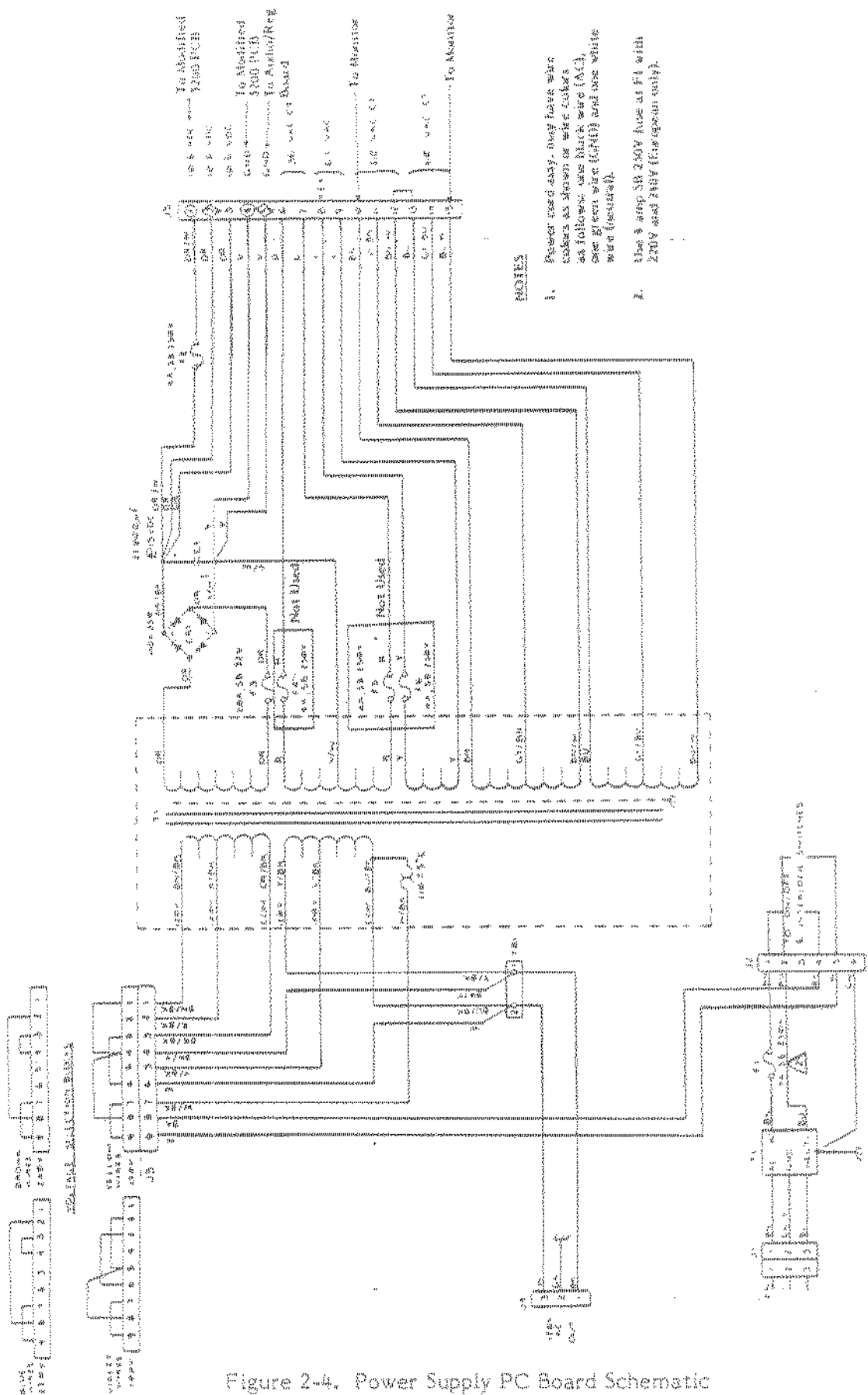


Figure 2-4. Power Supply PC Board Schematic

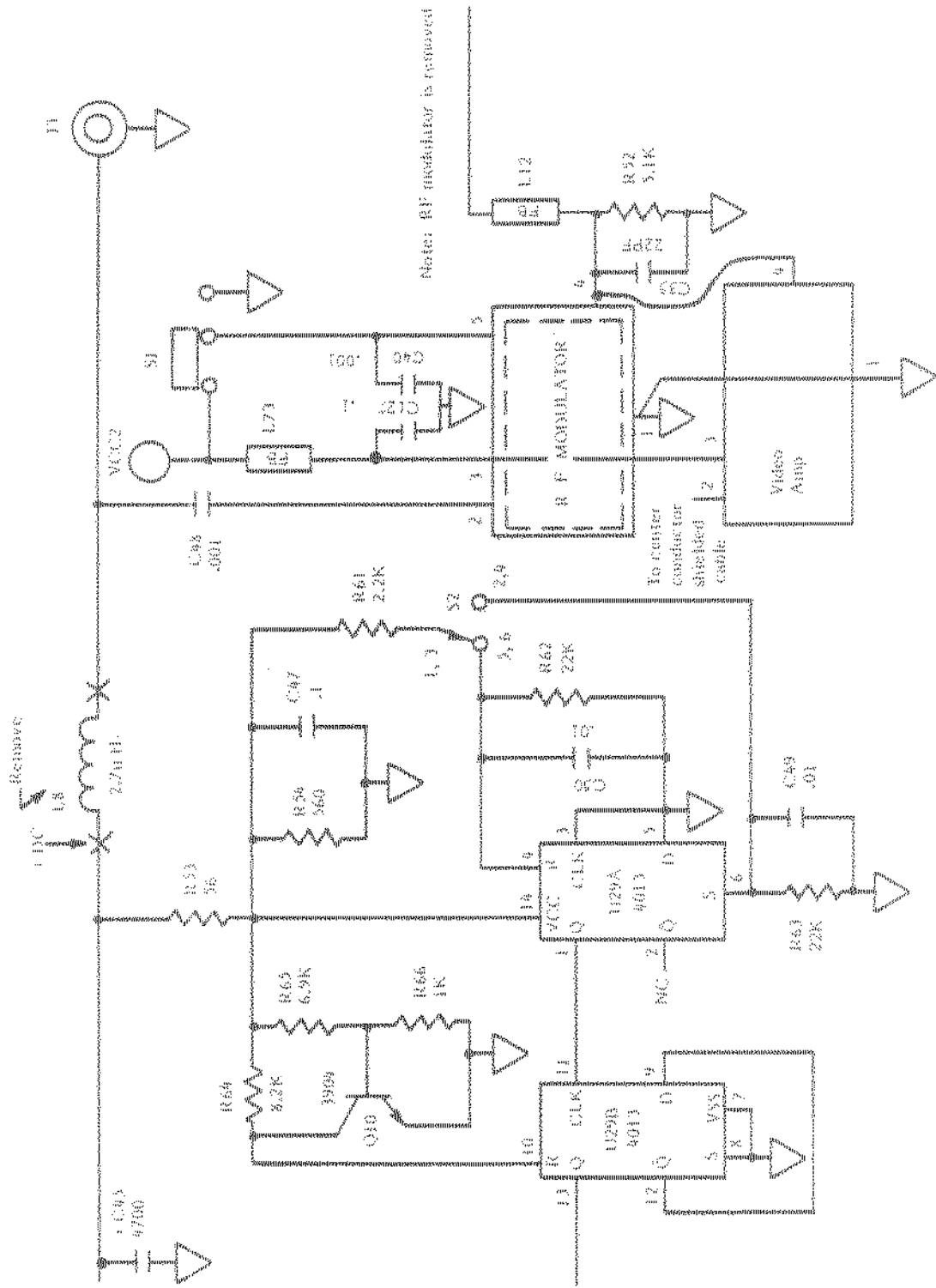


Figure 2-6. Modified CX5200 PC Board Schematic (RF Section Only)

COMPONENT SIDE

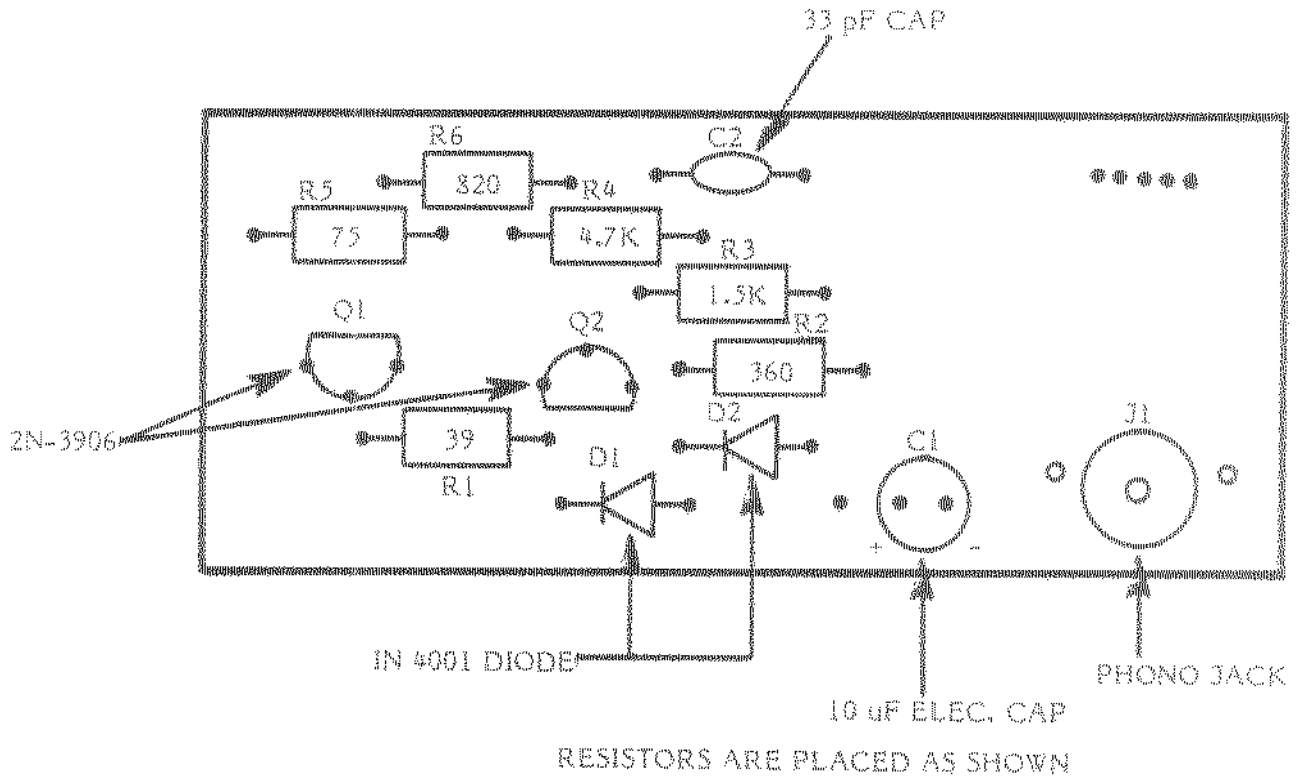


Figure 2-8. Video Amplifier PC Board Silkscreen

SECTION 3

TESTING PROCEDURES

Equipment Needed:

You need the following items to analyze which CX5200 Retail Demonstrator Assembly is defective:

- a Volt/OHM meter
- an RF Modulator TV/monitor Adaptor (Part Number FA100179) (supplied in kit)
- a color TV set (properly adjusted)
- a I.I Diagnostic cartridge
- Galaxian™ game cartridge (supplied with Retail Demonstrator)

INITIALIZATION PROCEDURE

Before you begin troubleshooting the retail demonstrator, be sure that the wires on the volume control knob (top shelf-front) are in the correct location. The orange wire and the brown wire must be connected as shown in Figure 3-1 (correct location).

To switch the wires, desolder them and put them in the correct location.

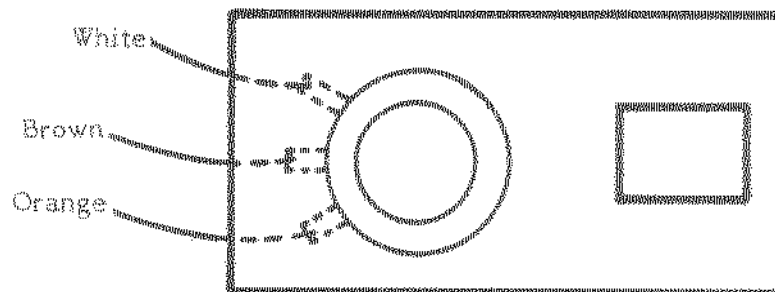


Figure 3-1. Volume Control Knob Wiring (Correct Location)

SECTION 4

DISASSEMBLY/ASSEMBLY PROCEDURE

Special Equipment Needed:

- Phillips head screwdriver
- 1/8" Hex wrench
- 3/32" Hex wrench
- 5/32" Hex wrench
- Small flat blade screwdriver
- 11/32" Nut driver (not more than 4 1/2" in length)
- a soldering iron and solder

NOTE: Be sure unit is unplugged before disassembling to any level.

Disassembly

Use Figure 4-1 as reference for Disassembly/Assembly procedures.

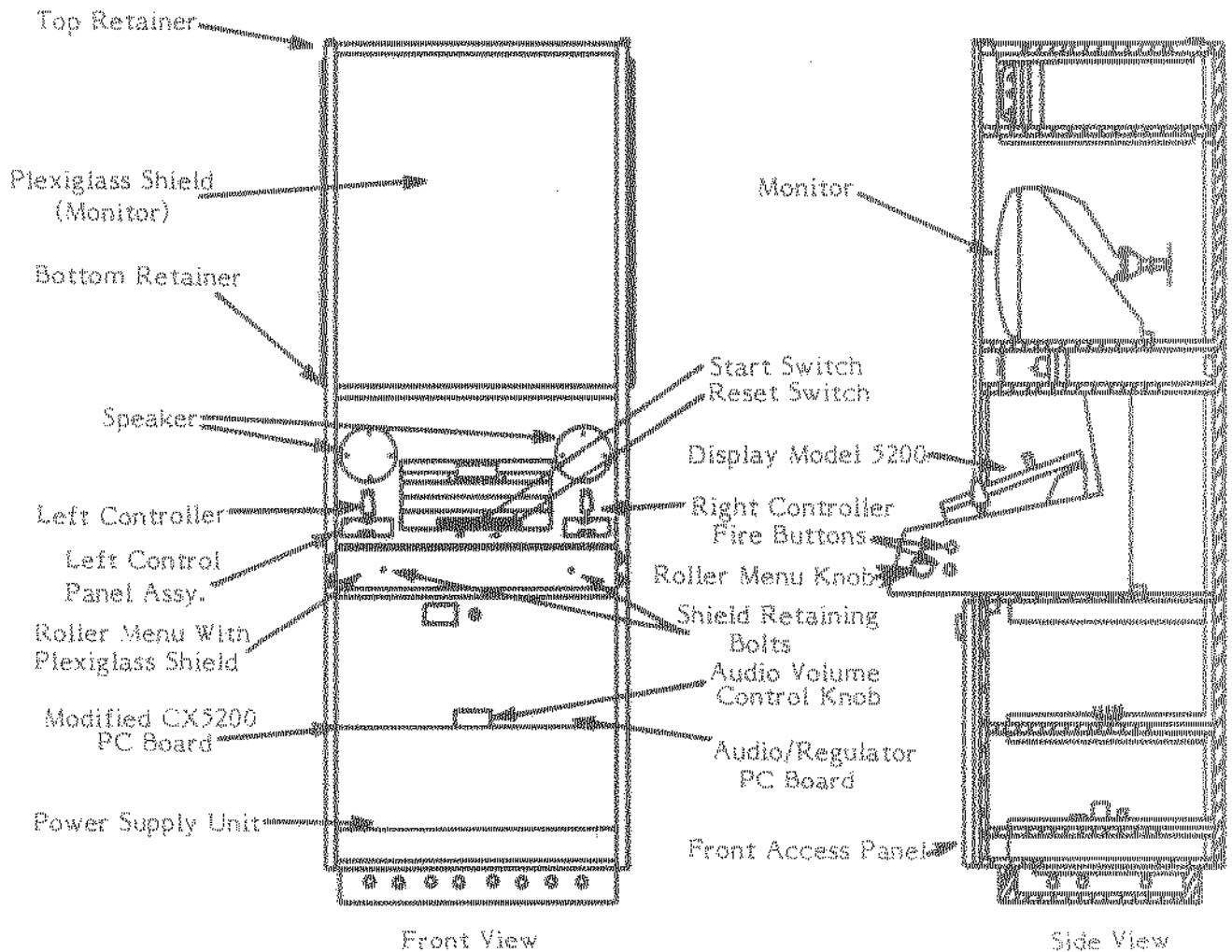


Figure 4-1. CX5200 Retail Demonstrator Assembly.

4. Remove the ground wire and disconnect the power harness and input signal harness from the monitor.
5. Carefully remove the monitor assembly from the retail demonstrator.

To remove the Control Panel Assembly:

1. Use a 5/32" Hex wrench to remove the two upper screws from the console plexiglass shield which covers the roller menu.
2. Use a small flat blade screwdriver to remove one of the roller menu knobs.
3. Loosen the four Phillips head screws on the roller menu (two beside each knob).
4. While supporting the roller menu, slide the shaft out.
5. Disconnect the wiring harness from the controller assembly.
6. Use an 11/32" nut driver to remove the six nuts which hold the control panel assembly to the console.
7. Carefully lift out the assembly.

To remove the Switches:

1. Follow steps 1 through 4 of the previous procedure to remove the roller menu.
2. Disconnect the slide-on connectors on the defective switch.
3. Remove the large nut on the back side of the switch assembly.
4. Remove the switch assembly.

ASSEMBLY

To replace the modified Model CX5200 PC Board, the Audio PC Board or the Power Supply Unit:

1. Align the four screw holes to position the module.
2. Insert and tighten the four phillips head screws and stand-offs (if applicable) which attach the module to the retail demonstrator.
3. Connect the wiring harnesses.

NOTE: THE RF CABLE IS SOLDERED TO THE MODIFIED CX5200 PC BOARD AND MUST BE CONNECTED TO THE MONITOR. SEE INSTRUCTIONS BELOW TO ACCESS THE MONITOR.

4. Replace the front access panel on the retail demonstrator.

To replace the Switches:

1. Place the switch assembly over the hole in the retail demonstrator. Position the assembly with the button on the outside of the demonstrator and the leaf spring assembly on the inside.
2. Insert the threaded shaft of the button through the hole in the leaf spring assembly.
3. Insert and tighten the large nut on the back of the switch assembly.
4. Connect the slide-on connectors.
5. Refer to the previous procedure to replace the roller menu.

SECTION 5

FAULT ISOLATION PROCEDURES

This section enables you to determine which assembly in the CX5200 Retail Demonstrator is defective.

Equipment needed

- a Volt/Ohm meter
- an RF modulator TV/Monitor Adaptor
- a TV Set, properly adjusted

To begin the Fault Isolation Procedures, find your unit's symptom in Table 5-1, Unit Symptom/Flowchart Entry Point, Page 5-2. Table 5-1 will send you to the page and flowchart to use to troubleshoot the unit.

TO USE THE FLOWCHART:

Follow the prompts in the order presented in the flowchart. When a question is asked, follow the line from the box that best applies to your unit's condition. When that line terminates with a letter inside a circle, turn to the page referenced next to the circle, locate the letter and continue the diagnosis. The flowchart leaves nothing to chance. It tells you when to perform a specific test and when to replace components.

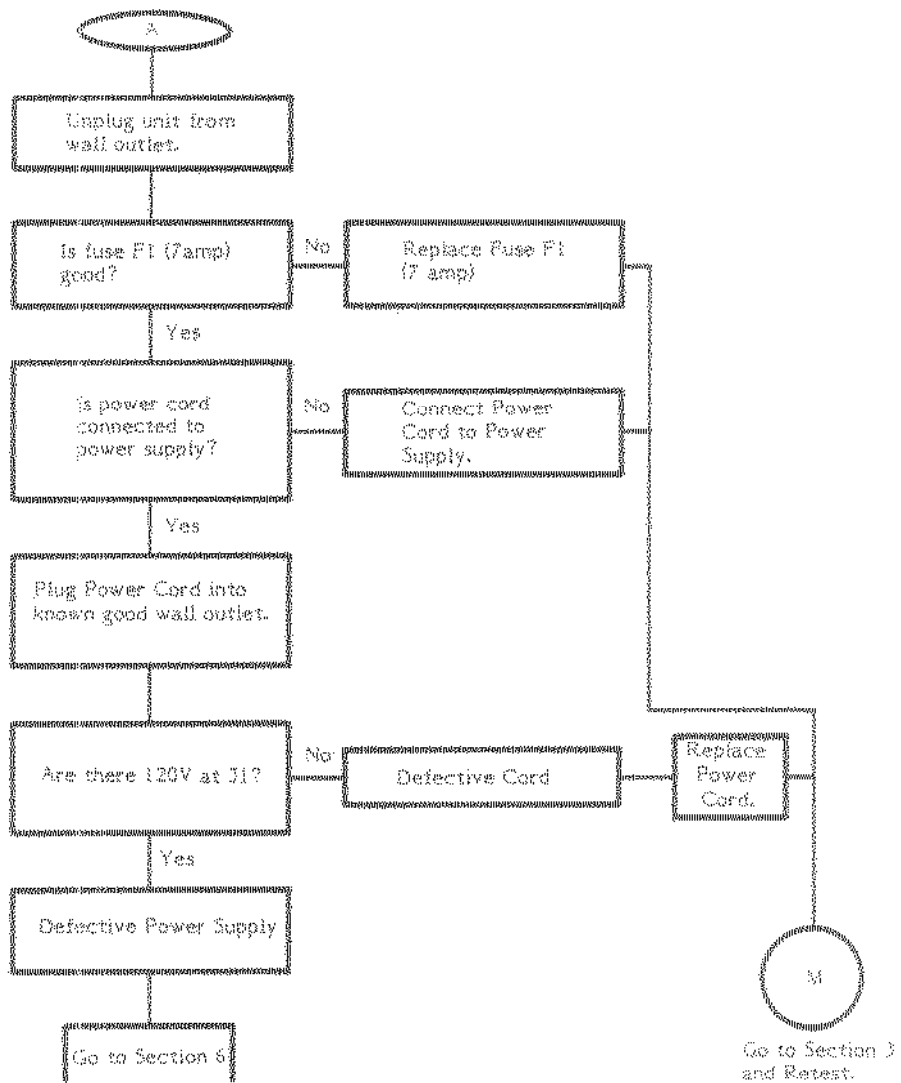
When the flowcharts call an assembly or board defective, follow procedures in Section 6 for disposition of the defective board and Section 4 for instructions to replace it.

If you have any problems, call the toll-free Atari Repair Hotline:

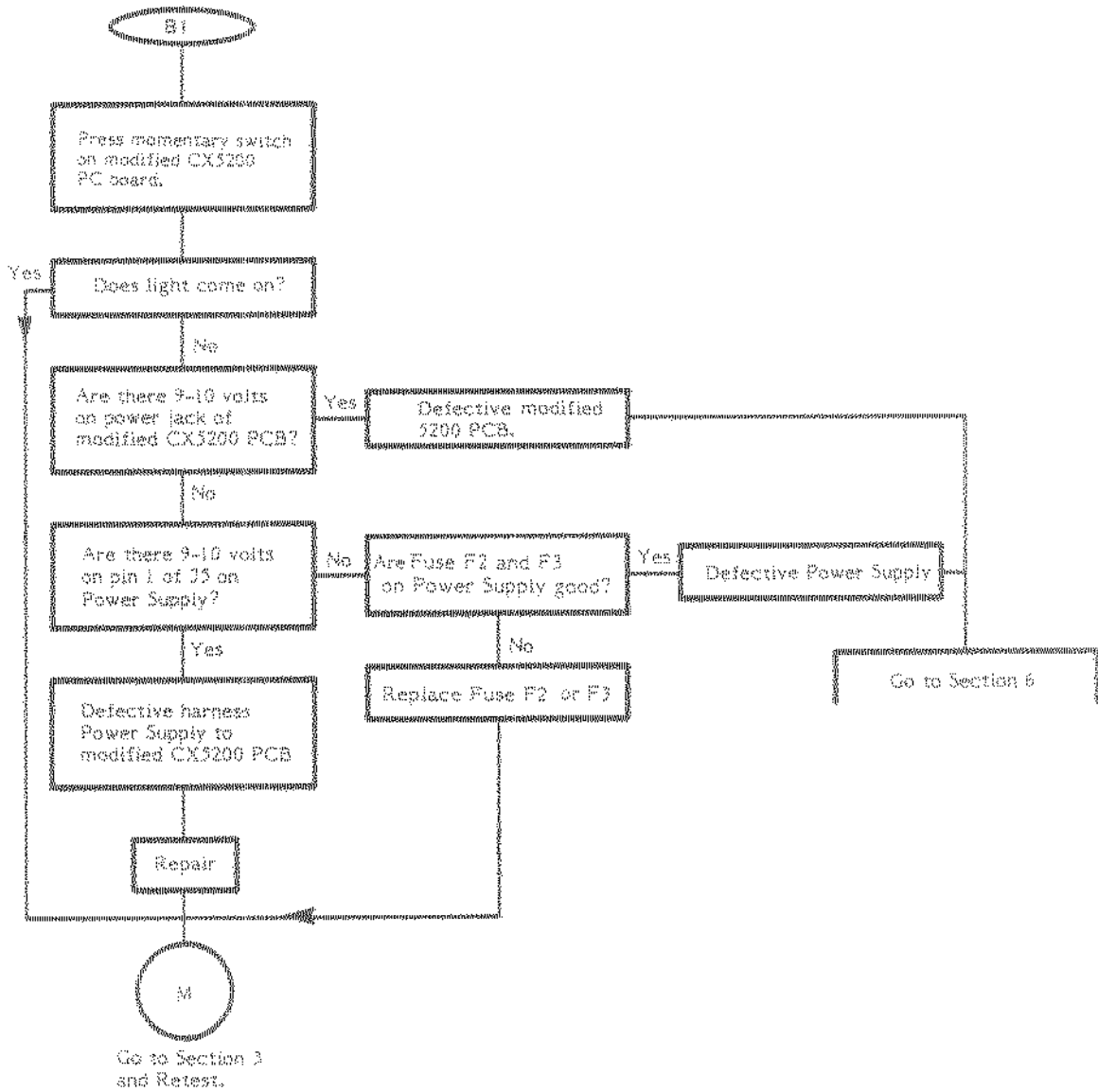
Inside California
(800) 672-1466

Outside California
(800) 538-1535

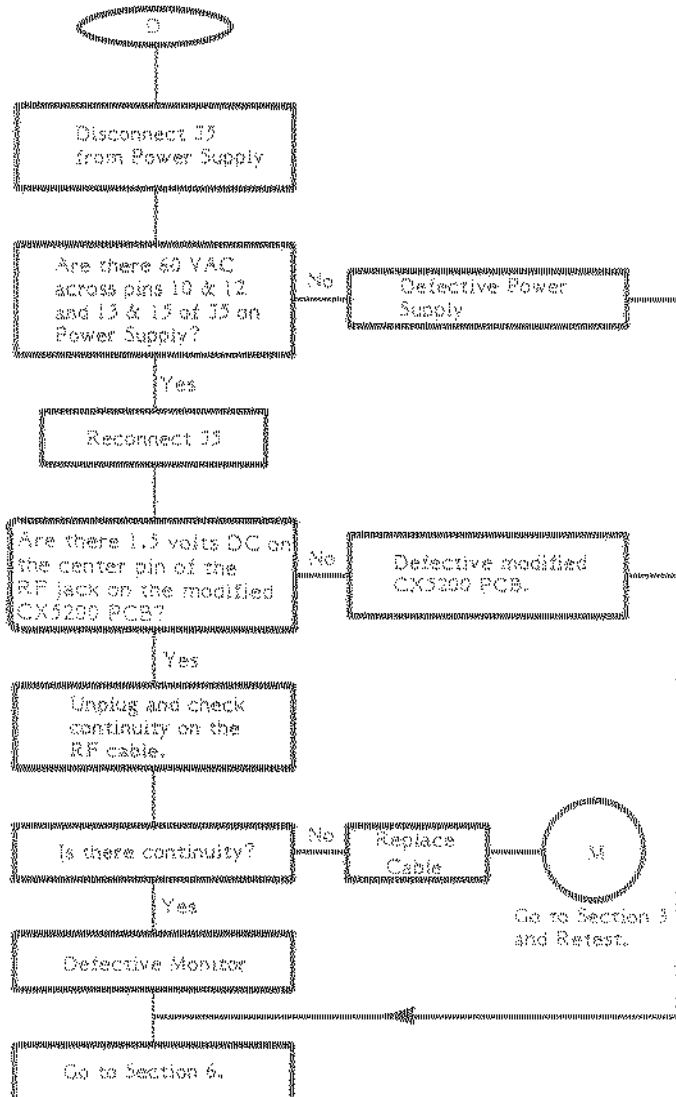
No Power At All



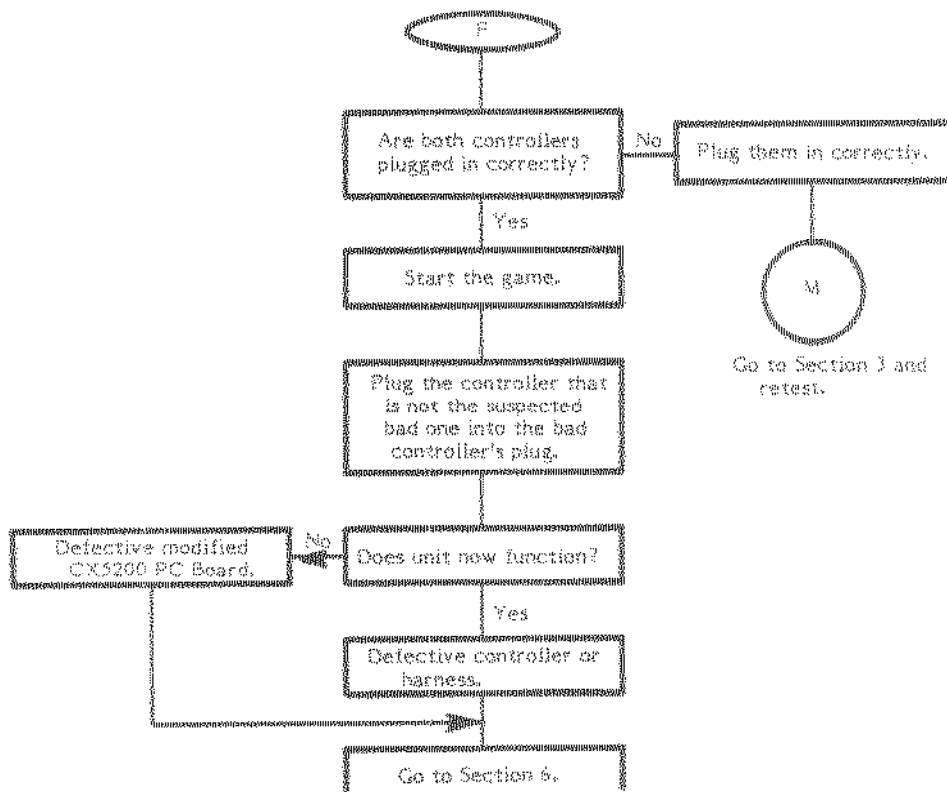
Power to Lights But Not to Modified CX5200 PC Board (Cont.)



No Picture With Audio



Keyboard or Joystick Failures



RF Modulator TV/Monitor Adaptor Procedures

The adaptor is supplied to enable you to check whether the video portion of the modified CX5200 PC Board is broadcasting correctly, thereby cutting down repair time.

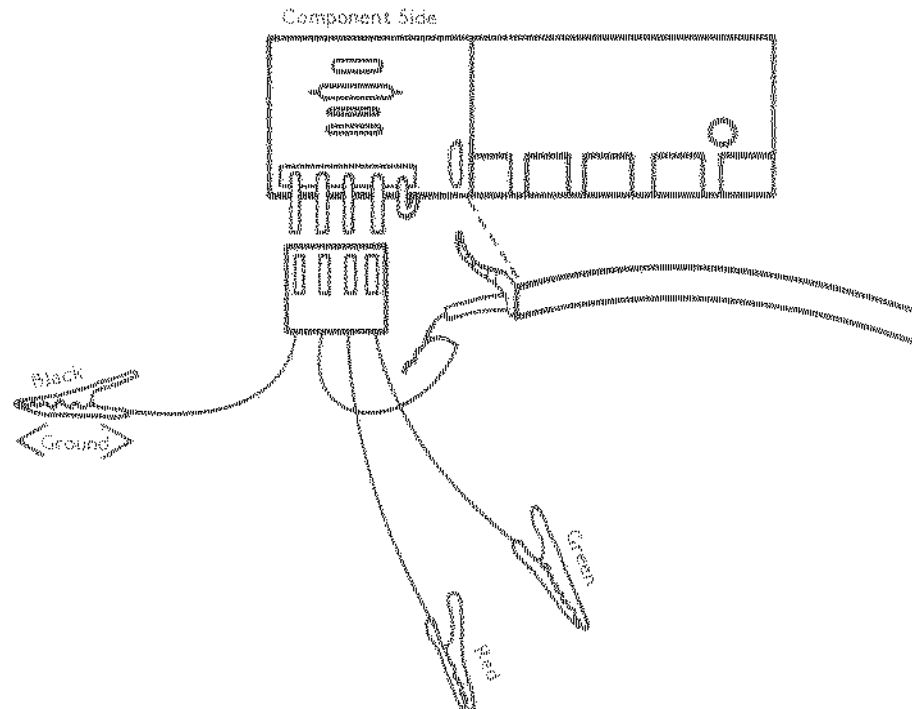


Figure 5-1. RF Modulator TV/Monitor Adaptor
Part Number FA100179

Connecting the Adaptor

Refer to Figure 2-8, Page 2-9 for the following steps:

1. With power to the modified CX5200 PC Board OFF, connect the Red lead to the RCA jack side of R3 (4.7K) on the video amp PC Board.
2. Connect the Green lead to the opposite side of R3 (opposite to the Red lead) on the video amp PC board.
3. Connect the Black lead to circuit ground (connect to the tabs on the PCB shielding)
4. Connect the RCA plug on the end of the RF cable into a typical 2600/computer switchbox.
5. Turn power to the modified CX5200 ON and select channel 2 on your television set.

NOTE: It may be necessary to tune your adaptor for best reception. This will have no effect on the modified CX5200 PC board since it does not use RF when in the demonstrator.

HOW TO CHANGE A LEFT CONTROLLER TO A RIGHT HAND CONTROLLER

Purpose: This procedure is used to change a left controller (only spare available) into a right controller to replace a defective right controller.

The following steps describe how to change the positioning of the potentiometers and the supports to allow sufficient cabinet clearance to operate the controller. Step 6 describes which wires to swap so that pots operate correctly in the new positions.

Use Figure 6-1 as reference for the following steps:

Procedure:

1. Lay the new (left) controller face down.
2. Cut the two tie wraps which hold the cables onto the base plate.
3. Unplug the keyboard connector (Note the polarity).
4. Remove the four screws which hold the pot assembly to the base plate.
5. Lift and turn the pot assembly 90 degrees to the right (left/right pot now becomes up/down pot and vice versa).
6. Replace the four screws which hold the pot assembly to the base.
7. Swap some of the wires on the two pots to conform to the new directions they operate on (i.e. left/ right pot becomes up/down pot). See detail figure 6-1 for proper wire locations (3 wires will have to be swapped: the yellow, the orange and one black).
8. Plug in the keyboard connector. Make sure polarity is correct (See Detail, Figure 6-1).
9. Secure the wiring to the base plate by tie-wraps.
10. Remove the defective controller from the retail demonstrator and insert the new one using instructions on pages 4-3 and 4-4.
11. After assembly, check pot arm alignment using page 6-5.

CONTROLLER POTENTIOMETER CALIBRATION

The two methods available for calibrating the controller potentiometers are:

- Using the I.I Diagnostic Cartridge and the CX5200 Retail Demonstrator
- Using an ohmmeter

Potentiometer Calibration Using the I.I Diagnostic Cartridge and the Retail Demonstrator.

1. Insert the I.I Diagnostic Cartridge into the socket on the modified CX5200 PC Board.
2. Manually select the Pokey Adjust test by pressing \bar{J} on the left controller and then the START Button.
3. Move the joystick as far to the left as possible then as far to the right as possible. Observe the values on the screen. When the joystick is moved to the left, the value range should be between 10 and 30. When the joystick is moved to the right, the value range should be between 220 and 9R (over range).
4. To obtain the correct value range, loosen the pot retaining nut and adjust the pot.
5. Repeat for up/down positions.

Potentiometer Calibration using an Ohmmeter.

1. Connect an ohmmeter across the wiper and the colored wire of the potentiometer.
2. With the joystick nearly centered, the meter should read 275K ohms +/- 25K ohms.
3. If you do not obtain a 275K ohm reading:
 - loosen the pot retaining nut.
 - while holding the joystick in the center position, rotate the pot housing to obtain a reading of 275K ohms.
 - Tighten the pot retaining nut.
4. While observing the meter, move the joystick as far to the left as possible, then as far to the right as possible. The range should be no more than 50K ohms when the joystick is moved to the left and at least 480K ohms when the joystick is moved to the right.

SECTION 7

ATARI CX5200 RETAIL DEMONSTRATORPARTS LIST

MAJOR ASSEMBLIES

<u>LOCATION</u>	<u>DESCRIPTION</u>	<u>PART NUMBER</u>
	CX5200 PC BOARD ASSY (modified)	CA020329
	TOP HOUSING ASSY	CA018175-01
	BASE ASSY	CA018176-01
	VIDEO AMP PC BOARD	CA020330
	REGULATOR/AUDIO PC BOARD ASSY	A035435-02
	POWER SUPPLY ASSY	A037671-01
	CONTROL PANEL (LEFT)	A039173-01
	CABINET (FINAL ASSY)	A039054-01
	RF MODULATOR TV/MONITOR ADAPTOR	FA100179

	<u>CX5200 PC BOARD ASSY (modified)</u>	<u>CA020329</u>
C1,2,5,7,8,15-17 21,23-29,34,47,60, 73,86	Cap. Ceramic Axial .1uF (50V)	C014181-03
C3,4,6,12,18,22, 36,49,50	Cap. Ceramic Axial .01uF (50V)	C014180-18
C9	Cap. Ceramic Axial 100pF (50V)	C014180-03
C10,31,33,55	Cap. Ceramic Axial 47pF (50V)	C014179-05
C11,20	Cap. Ceramic Axial 10pF (50V)	C014179-03
C13,14	Cap. Polystyrene 320 pF (25V)	C018621
C19,99-106	Cap. Polyester Radial .047uF (100V)	C017518
C30,32	Cap. Ceramic Axial 68pF (50V)	C014179-12
C35	Cap. Ceramic Axial 22pF (50V)	C014179-01
C37,38,40,48,51-54, 91-98,107-110,124,126, 131-135	Cap. Ceramic Axial .001uF (50V)	C014180-17
C41,42,119,144	Cap. Tantalum Axial 10uF (20V)	C017516
C43,44	Cap. Polyester Radial .22uF (100V)	C010394
C45	Cap. Elec Radial 4700 uF (25V)	C016033
C56-59,61-72,74-85, 87-90,112-115	Cap. Ceramic Axial 470pF (50V)	C014179-16
C111,117,118,120-122 125,127,129,130,136	Cap. Ceramic Axial .1uF (50V)	C014181-03

<u>LOCATION</u>	<u>DESCRIPTION</u>	<u>PART NUMBER</u>
U1	IC CD4030B (HEX CMOS Buffer)	C010816
U2	IC 6502 (Modified)	C014806
U3	IC ANTIC	C012296
U4,15	IC 74LS244	C014313
U5	IC GT1A	C014805
U6	IC 74LS139N	C018032
U7	IC POKEY	C012294
U8	IC ROM OS	C019156
U9-13	IC 4052 (Analog multiplexer)	C017950
U14,28	IC 74LS10	C014339
U16,17	IC 74LS258N	C019052
U18-25	IC RAM (16K X 1D Single Supply)	C018082
U27	IC 74LS00	C014341
U29	IC 4013B (Dual Type D Flip Flop)	C014334
CRI-4	Diode 1N914	31-1N914
Q1,2,5,11,15	Transistor 2N3906	C018991
Q3,8-10,12-14	Transistor 2N3904	34-2N3904
Q4	Transistor 34-2N3563	34-2N3563
Q6,7	Transistor MJE210	C018094
Y1 (Alternate Listed)	Crystal 3.579575 Mhz (HC-18)	C015510
Y1 (Alternate for P/N C015510)	Crystal 3.579575 Mhz	C010177
L1	Inductor Variable (0.85-1.2uH)	C010823
L2	Inductor Axial 2uH	C010822
L3	Inductor Axial 4.7 uH	C014804
L4-6	Inductor Axial 22uH	C014380
L9,11-16,18	Inductor Ferrite Bead	C014384
DS1	LED	C014776
DS1 (Part of)	LED Standoff	C018143
VR1,2 (Part of)	Voltage Regulator 7805 (5V/1A)	C014348
S1	Switch Slide Channel Select	C012241
S2	Switch Momentary Push Button	C018093-01
J1	Connector Cartridge PC Board Mount (18/36)	C018081
J3	Connector Phono Jack	C018245
Port 1-4	Connector (15 pin)	C018013
X1,6,9-13,16-25	Socket IC (16 pin)	C014386-03
X2,3,5,7	Socket IC (40 pin)	C014386-09
X4,15	Socket IC (20 pin)	C014386-05